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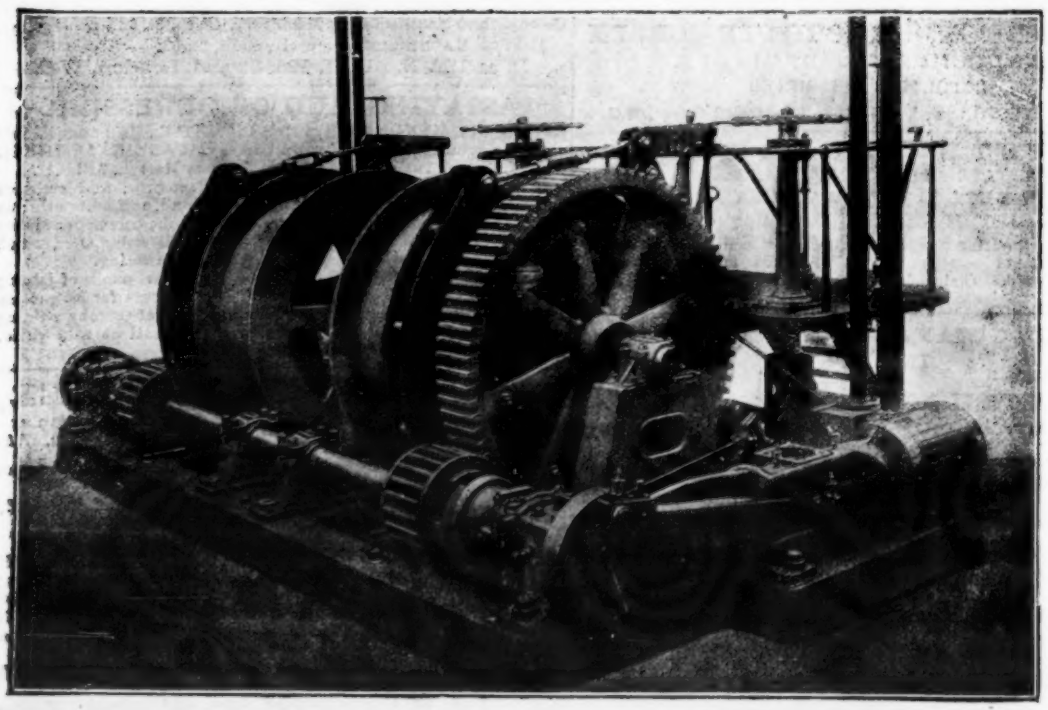

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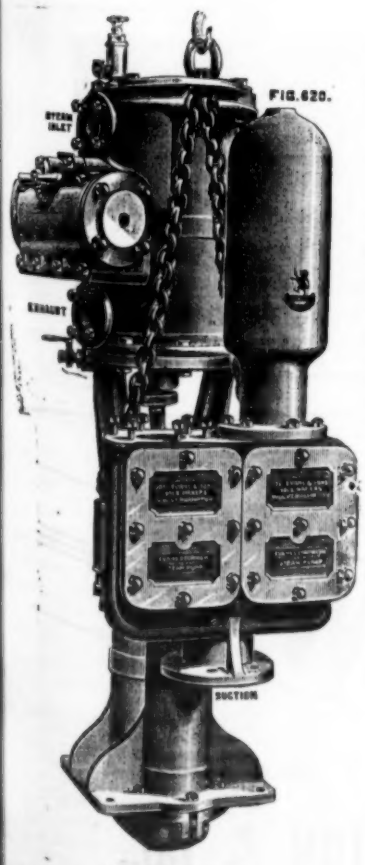
NO TAPPETS, LEVERS, OR EXTRANEOUS GEAR.

"EVANS and TONKIN'S" Patent "CORNISH" SINKING PUMPS have been used on all the recent modern sinking operations of importance, including

North's Navigation Collieries, the Blackwall Tunnel, the Barry Dock Extension, the Griff Colliery Sinkings, the Coppice Colliery, the Fishley Colliery, the Moss Hall Colliery, the North Walbottle Colliery, and other large Sinkings, also the Cornwall, North Wales, Rand, West African, West Australian, Victorian, South American Gold Mines, &c., &c.



GRIFF" PATTERN "CORNISH" SINKING PUMP.

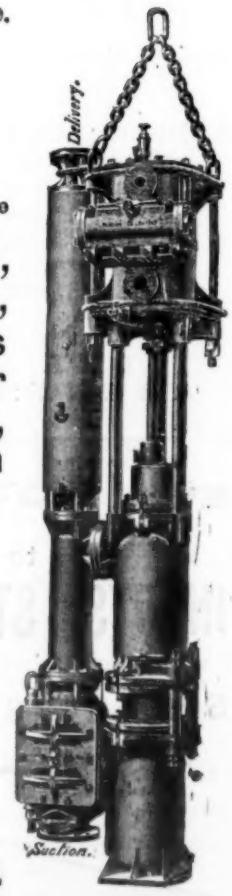
London Office
16, UNION COURT, OLD BROAD ST., E.C.

DEPOTS:
NEWCASTLE-ON-TYNE, GLASGOW, WAKEFIELD, MANCHESTER, CARDIFF, and BELFAST.

JOHANNESBURG. Etc.

FIG. 875, "FLUOMETER" PATENT STEAM VACUUM PUMP.

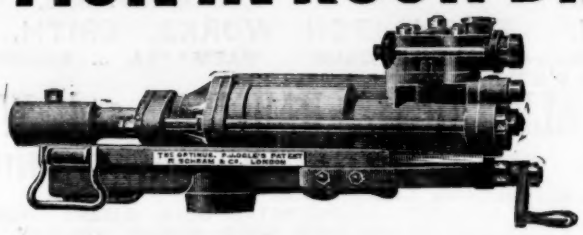
"CORNISH" PUMPS.
"DUPLEX" PUMPS.
"WALL" PUMPS.
"RAM" PUMPS.
"HORSE" PUMPS.
"POWER" PUMPS.
AIR COMPRESSORS, &c.



"STRAIGHT-LINE" PATTERN SINKING PUMP.

WOLVERHAMPTON.

REVOLUTION IN ROCK DRILLING



"OPTIMUS" COMPOUND ROCK DRILL.

(P J. OGLE'S PATENT.)

Consumes 40 per cent. less Compressed Air than any other Drill at the same time giving the most effectual results.

AIR COMPRESSORS,

WITH COMPOUND AIR AND STEAM CYLINDERS,

Fitted with SCHRAM'S Inlet and Outlet Valves giving the greatest efficiency.

"SCHRAM'S" IMPROVED ROCK DRILLS,

SUPPLIED TO THE INDIAN, COLONIAL, AND OTHER GOVERNMENTS.

2500 IN USE IN ALL PARTS OF THE WORLD.

Hand-Power Diamond Prospecting Drills.

ESTIMATES AND FULL PARTICULARS ON APPLICATION.

RICHARD SCHRAM & CO., 17a, Great George St., Westminster, S.W.

TELEGRAMS "SCHRAM, LONDON," A1, A.B.C. and The Engineering Telegraph Codes Used.

FRIED. KRUPP· GRUSONWERK,

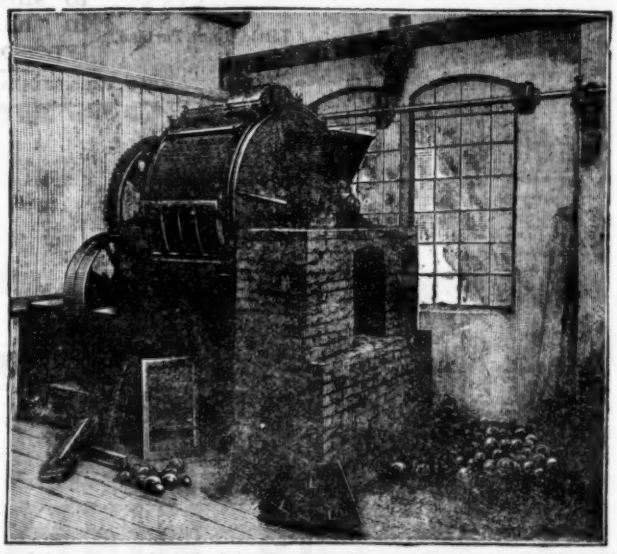
MANUFACTURERS OF

1. Chilled Cast Iron, Cast Steel and Malleable Iron Articles. MAGDEBURG-BUCKAU.
2. Machinery and Apparatus for treatment of Ore of all description.

GOLD EXTRACTION MACHINERY.

(Laszlo' Amalgamators giving 20 to 40 per cent. more Gold than others).

SILVER EXTRACTION MACHINERY.



STAMP BATTERIES.

Patent Ball Mills.

(Dry Crushers).

ORE-CONCENTRATION

DRY SEPARATOR

OF

PAPE-HENNEBERG.

3. Disintegrating Machinery of all kinds, such as Patent Ball Mills for Ores, Quartz, Cement, Basic Slag Grinding, &c. Excelsior Mills for Food Products, also for Tanneries, Chemical Factories, Sugar Factories, &c. Stone Breakers, Roller Mills, Crushers, &c., &c., Runners.
4. Whole installation for Cement, Porcelain, Emery, Manure, Gypsum, Bone, & Ore Mills.

HYDRAULIC PRESSES. LEAD PIPE PRESSES. COMBINED COFFEE GRINDING AND CLEANSING MILLS. ROLLS FOR ALL METALS. CRANES. RAILWAY MATERIAL.

CATALOGUES IN ALL LANGUAGES.

SOLE AGENT: **W. STAMM, 3, EAST INDIA AVENUE, E.C.**

"CHAMPION" ROCK DRILLS

Have all the latest improvements resulting from 10 years' practical experience in constant work.

Unrivalled for efficiency and durability in Sinking Shafts, Driving Levels & Tunnels.

THE CHAMPION ROCK-BORER AND AIR COMPRESSOR CO.

SOLE PROPRIETORS AND MANUFACTURERS,

E. P. and H. P. VACHER,

MAKERS OF ROCK DRILLS, AIR COMPRESSORS,

TURBINES, WATER WHEELS, WATER MOTORS, RAMS

AND OTHER

MINING MACHINERY.

63, Queen Victoria Street,

LONDON, E.C.

Telegraphic Address: "TURNSCREW, LONDON."

DELTA METAL

FOR ALL ENGINEERING WORK.

STRONGER AND MORE DURABLE THAN STEEL.

Specially Adapted for MINING WORK

on account of its very high Resistance to Corrosion.

DELTA

CAST, FORGED, STAMPED, ROLLED, DRAWN.

For full Particulars and Prices apply to

THE DELTA METAL COMPANY (Ltd).

110, Cannon Street, London, E.C.

Telegrams:—"DELTA." London. Telephone No. 1122.

EVERY VARIETY OF

PUMPING MACHINERY

95000 PUMPS SOLD

BLAKE & KNOWLES LD

117 QUEEN VICTORIA ST LONDON

200000 PUMPS IN MINES

MINING PUMPS of the BEST TYPE. A SPECIALITY.

For PURE ALUMINIUM

98 to 99½ per cent. (98 per cent. minimum guaranteed) in

INGOTS, STICKS, & ROLLING SLABS;

ALSO FOR

SHEETS, &c., AND

FERRO-ALUMINIUM.

ALUMINIUM.

APPLY TO

HENRY R. MERTON & CO.,

2, Metal Exchange Buildings, Leadenhall Avenue.

LONDON, E.C.

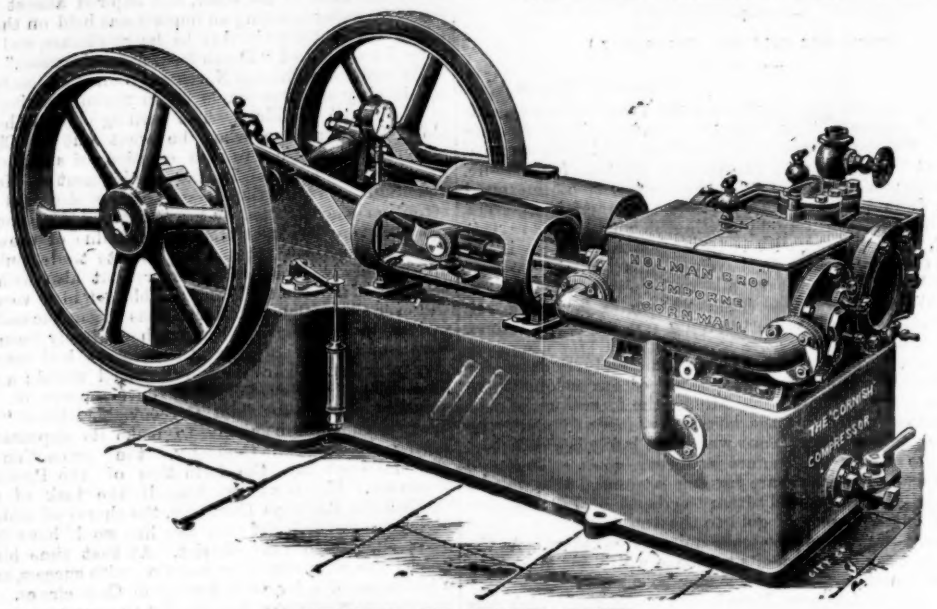
AGENTS FOR THE BRITISH ALUMINIUM COMPANY, LIMITED.

HOLMAN Bros., Camborne, Cornwall.

ESTABLISHED 1839.

Patentees and Sole Makers of

"THE CORNISH" ROCK DRILL and "THE CORNISH" COMPRESSOR.



RECORD OF WORK DONE

At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS**, equal to five times the Speed of Hand Labour

At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES**, and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

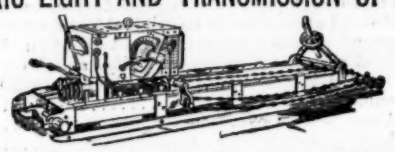
Estimates for ROCK BORING PLANT and GENERAL MINING MACHINERY on Application.

London Offices: 7 and 9, LEADENHALL BUILDINGS, E.C.

JOHN DAVIS & SON,

ALL SAINTS WORKS, DERBY;
118, NEWGATE STREET, LONDON, E.C.
CARDIFF, JOHANNESBURG, CALCUTTA.

ELECTRIC LIGHT AND TRANSMISSION OF POWER.

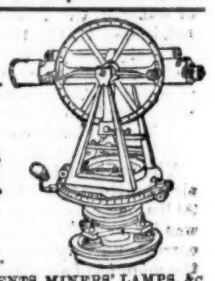


Jeffrey Machines for Undercutting Coal,
WORKED EITHER BY COMPRESSED AIR OR ELECTRICITY.
OVER 600 IN DAILY USE

ELECTRIC
BLASTING APPARATUS.
HIGH OR LOW TENSION
EXPLODERS.
CABLES, FUSES.

Electric Signals
and
Telephones.

MINING AND
SURVEYING INSTRUMENTS,
THEODOLITES, HEDLEY
DIALS, LEVELS,
CLINOMETERS.



MINERS' SAFETY LAMPS.
ALL PARTS INTERCHANGEABLE.

CATALOGUES UPON APPLICATION.
SEC. A. MATHEMATICAL & MINING INSTRUMENTS, MINERS' LAMPS, &c
SEC. B. ELECTRICAL PLANT AND STORES.

THE STAFFORDSHIRE ADVERTISER.
ESTABLISHED 1795.
The Principal County Paper in the Midlands.

Advertisers will find it the BEST MEDIUM for reaching superior class of readers over large area centred by Staffordshire fifth county in population and sixth in wealth

Published at Stafford every SATURDAY (Price Twopence), and to be obtained at Euston and Principal Bookstalls between London Liverpool, and Manchester

AWARDS: CRYSTAL PALACE, 1890; TASMANIA, 1891; KIMBERLEY, 1892.

CONCENTRATION.

The Clarkson-Stanfield Ore Reduction Co. (Limited).

In the CLARKSON-STANFIELD process of Concentrating Refractory and Complex Ores no water is required; dust is reduced to a minimum; the loss of Mineral through water-borne Slimes is obviated.

OUTPUT ½ TO 2 TONS PER HOUR, ACCORDING TO SIZE OF MACHINE.

CONCENTRATOR TO BE SEEN IN OPERATION AT THE COMPANY'S ONLY ADDRESS,

6, COLONIAL AVENUE, MINORIES, LONDON, E.

The Machine is superior to Sieves for Sizing Homogeneous Substances, such as Emery, Sand, and Powders, and may be used to great advantage in the preparation of Ochre.

N.B.—The owners of the Carndochan Mine, near Bala, North Wales, will, by arrangement, show their CLARKSON-STANFIELD plant working on a Refractory Low Grade Gold Ore.

NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs. Rayner and Company, Patent Agents, 37, Chancery Lane, London, W.C., who will forward all information regarding them free on application.

8318 William George Thomas, 85, Brunswick Road, Liverpool.—A new (or) method of ventilation of coal mines, railway tunnels, steamships, &c. —April 20.

8949 Joseph Appleton and William Cundliffe, 6, Lord Street, Liverpool.—Improvements in glands and bushes for engines and other machinery. —April 22.

8358 Arthur Koppel, 4, South Street, Finsbury, London.—Improvements in bearings for the axles of mining and other wagons.—April 22.

8391 Lambton Le Breton Mount, 115, Cannon Street, London.—An improved feedwater heater for locomotive and other boilers.—April 22.

8353 James Hermann Rosenhal, 62, St. Vincent Street, Glasgow.—Improvements in and relating to boiler furnaces.—April 23.

8436 Paul Giffard, 4, South Street, Finsbury.—Improvements in and connected with steam engines.—April 23.

8479 Richard Aemilius Lewis, Sugley House, Lemington-on-Tyne.—Improvements relating to gas regenerative furnaces.—April 24.

8495 Sherard Osborn, Cowper Coles, and Samuel Learoyd, 47, Lincoln's Inn Fields, London.—Improvements in the manufacture and production of metallic alloys.

8971 Alfred Julius Boult, 111, Hatton Garden, London.—Improvements in or relating to the treatment of ores.—April 24.

8586 Charles Denton Abel, 23, Southampton Buildings, Chancery Lane, London.—Piston slides for steam engines.—April 25.

SPECIFICATIONS PUBLISHED.

9231, Ormerod, preventing overwinding in mine hoists, &c., 1896; 9746, Macalpine, steam engines, &c., 1896; 10367, Helzel, muffle furnaces, 1896; 10645, Morrison, gearing, steam boilers, 1896; 21062, Sole, steam boilers and furnaces.

The above specifications published may be had of Messrs. Rayner and Co., 37, Chancery Lane, London, at 10d. each, including postage.

BELGIAN PIG IRON.—According to recent advices, the production of Belgian pig iron is still far below the needs of consumers, and though prices are not yet out of proportion to those secured for finished iron, it is feared that they will go much higher, in which event the position of the rolled iron firms will be an exceedingly difficult one. Puddling iron can still be procured at Longwy, at 43 francs per ton, though producers are trying to get 2 francs more. The Athus Company have just put another.

MR. EDMUND SPARGO, M.E., F.G.S., embarked for Canada in the s.s. *Parisian* on Thursday last, to execute an important professional commission for a well known foreign banking house in Abchurch-lane, E.C. We understand Mr. Spargo is expected to return to London in about six weeks.

JOINT-STOCK COMPANIES.

NEW REGISTRATIONS.

THE following are among the joint-stock companies registered at Somerset House since our last notice:—

Thistle Consolidated Mines (Limited).—Registered April 25 by Snell, Son, and Greenip, 1 and 2, George Street, Mansion House, E.C. Capital £200,000, divided into 800,000 shares of 5s. each. Objects: To adopt and carry into effect an agreement expressed to be made between the Thistle Reef Gold Mining Company (Limited) of the first part, James Charles Bolton and Alfred Henry Oxenford, the liquidator of the said company, of the second part, and Edward Frederick Menzies, on behalf of this company of the third part; and a second agreement made same date—April 20, 1896—between B. Rosen of the first part and E. F. Menzies, on behalf of this company, of the second part; to acquire the properties known respectively as the Thistle Low Level, the Thistle Extension East, and the Thistle North; to develop and turn to account the said properties in such manner as the company shall see fit; to acquire any other mines, mining, water and other rights, grants, leases, claims, concessions, options of purchase, metalliferous land, &c., and to carry on the business of a mining, milling, smelting and metallurgical company in all its branches; to construct, maintain, and work rail and tram roads, wharves, piers, docks, gas, water and electric works, &c.; as farmers and graziers stockraisers; to lay out towns and villages, and to promote immigration thereto; as shipowners, &c. The first directors—of whom there shall be not less than three nor more than five—are to be elected by the company. Qualification, £400.—Remuneration. Chairman £200, ordinary directors £150 per annum each, to be increased according to profit. Registered office: Copthall House, Copthall Avenue, E.C.

Waihi Gladstone Gold Mining Company (Limited).—Registered April 24 by Swepston and Stone, 31, Great St. Helens, E.C. Capital £100,000, divided into 100,000 shares of £1 each. Objects: To adopt and carry into effect an agreement made April 13 between the London and West Australian Syndicate (Limited) of the one part, and this company of the other part; to acquire any mines, mining, water, and other rights, grants, leases, claims, concessions, options of purchase, metalliferous land, &c., in New Zealand or elsewhere; to develop and turn to account the same in such manner as the company shall see fit; and to carry on the business of a mining, milling, smelting, and metallurgical company in all or any of its branches; to construct, maintain, and work rail and tram roads; to employ and dispatch prospecting and exploring expeditions; to develop the resources of such lands, farms, estates, and other property as may from time to time be acquired by the company by clearing, draining, farming, planting, and building thereon; as builders and contractors, farmers and graziers, stock raisers, shipowners, storekeepers, &c. The first directors—of whom there shall be not less than three nor more than seven—are to be elected by the signatories. Qualification 200 shares. Remuneration, Chairman £200; ordinary directors, £150 per annum each. Registered office, 8, Old Jewry, E.C.

Pioneer Petroleum Syndicate (Limited).—Registered April 28 by Maddisons, 1, King's Arms Yard, E.C., with a capital of £250,000, divided into 50,000 shares of £1 each. Object: To acquire by purchase or otherwise, work, develop, and generally turn to account any land, oil wells, refineries, &c., and to generally deal with and distribute petroleum and petroleum products. The number of directors is not to be less than two nor more than seven; the subscribers are to appoint the first. Qualification, £200. Remuneration as the company may decide.

French Factories and Gold Mining Company of Mozambique (Limited).—Registered April 30 by [illegible]. Capital £30,000, in £1 shares. Objects: To adopt and carry into effect an agreement expressed to be made between George Focké of the first part, and this company of the other part, for the acquisition of certain mining claims, &c., situate in the district of Manica, in the Portuguese Dependency of Mozambique; to deal with the same in such manner as the company shall see fit, and to acquire any other mines, mining, water and other rights, leases, claims, options of purchase, metalliferous land, &c.; to develop and turn to account the same, and to carry on the business of a mining, milling, smelting, and metallurgical company; to construct and work rail and tram roads; to despatch prospecting and exploring expeditions; to develop the resources of such lands and other property as may be acquired by clearing, draining, farming, planting, and building thereon; as builders and contractors, farmers and graziers, stock raisers, shipowners, storekeepers, &c.

CONTRACTS OPEN:

FOR MINE, QUARRY, RAILWAY, AND ENGINEERING WORK, STORES, &c.

*** *We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given.*

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

HOME CONTRACTS.

Pumping Station, May 19 (*Ware, Herts*).—For erection of a small pumping station, &c., at Ware, for the Ware Urban District Council. Plans and specifications can be seen at the office of Mr. Geo. H. Gisby, clerk, Council Offices, Ware, between 10 a.m. and 4 p.m. Sealed tenders, endorsed "Ware Water Supply Pumping Station," must be sent to the clerk by 4 p.m. on 19th inst.

Weiring Repairs, May 11 (*Abergavenny*).—For weiring repairs (labour only) to the river bank near the sewer bridge. For particulars apply to Mr. Haigh, Town Hall, to whom tenders are to be delivered by noon on 11th inst.

Coal, May 11 (*New Mills*).—For the supply of best gas coal, washed nuts, and cannel for year ending June 30, 1897, for the Urban District Council. Form of tender and specification may be had on application to Mr. E. Jones, gas manager. Also for the purchase of surplus tar and liquor for one year ending June 30, 1897—coal carbonised, 1300 tons. Tenders to be sent to Mr. Joseph Pollitt, clerk, Town Hall, New Mills, by 11th inst.

Coal, May 12 (*Salford*).—For the supply of coal for the various departments of the Corporation for the Gas Committee. Full particulars from the gas engineer, Gas Offices, Bloom Street, Salford. Sealed tenders, endorsed "Tender for Coal," addressed to the Chairman of the Gas Committee, to be delivered to Mr. Samuel Brown, town clerk, Town Hall, Salford, by five p.m. on 13th inst.

Locomotives.—*Sofia* (*Bulgaria*).—The Secretary of State for Foreign Affairs has received a despatch from Her Majesty's Agent and Consul General at Sofia, in which he states that tenders for locomotives required for the Bulgarian State Railways are invited by the Bulgarian Government. A copy of the conditions of tender is enclosed in Mr. Elliot's despatch, and may be

DEFECTIVE ORIGINAL

TRANSMISSION OF POWER BY COMPRESSED AIR AT THE NORTH STAR MINE, CALIFORNIA.*

By P. R. ROBERT.

(*Concluded from page 559.*)

THE compressed air is delivered at the works 813 feet distant, passing through pipes (6 inch diameter) underground, and is delivered at practically its original temperature of 60° F. The compound engine is arranged to cut off at one-half stroke. Another trial with the compressor resulted as follows:—

The horse power of water used on the wheel (220 cubic feet) was	300
The horse power of friction and loss on wheel	30
The horse power delivered to compressor	270
The horse power used in compression as shown by indicator cards	258

the delivery of compressed air being the same. Both the foregoing trials were made with the rectangular nozzle described before. A number of trials were made to regulate the flow of water from a nozzle of that shape, so as to secure full efficiency, with one-half or one-fourth of a full load, but the results were not satisfactory. Finally, a nozzle with a circular opening was adopted, and is now being used. It is 2 inch in diameter, and permits of perfect regulation, the governor opening and closing the gate automatically, as the circumstances require, and at the same time securing full efficiency for the water used even with one-half or one-quarter load. The efficiency of the wheel, as shown in the second trial, was 90 per cent. The reason given for the larger amount of friction of compressor, as shown in the first instance, was that there was a considerable amount of water in the inter-cooler at the time of the trial, which was not known at the time.

Finally, the results of many trials showed the average head of water to be 730 feet, and the average (theoretical) horse power of water upon the wheel was 304. The average efficiency of the wheel was found to be 90 per cent.

The indicated compressor load was	250 h.p.
The friction lode was	22 ,,

The volumetric efficiency was 95 per cent., the volume of free air admitted was 1412 cubic feet per minute; compressed to 90 lbs. gauge pressure; the ratio of compression by atmosphere was 7·7 = 184·6 cubic feet per minute at 90 lbs. These tests correspond very closely to one previously made with respect to the amount of air admitted to the cylinders, which was carefully measured and found to be 96·6 per cent. of the theoretical. The friction, as before stated, was equal to 8·5 per cent., hence we have:—Water power = 100. Water wheel = 109 × 90 = 90 per cent. 100 — 8·5 = 91·5. 91·5 × 90 = 82·35 per cent. efficiency for the machine. The estimated horse power, as developed by the hot air jacketed cylinders with a ratio of expansion of 6·07, and the air heated to 350° F. was 254 horse-power. 254 ÷ 250 = 1·01 and 82·35 × 1·01 = 83·5 per cent. efficiency for the work, *exclusive of the cost of wood.*

Substituting water for wood at cost price the efficiency is 76 per cent. The foregoing are the figures of Mr. A. D. Foote, the company's engineer, who has superintended the erection of the plant from the beginning, and apply to the efficiency of the plant so far as regards the consumption of compressed air by the compound hoisting engine, but do not apply to the compound pump, the ratio of expansion of which is somewhat less, the valves being ordinary slide valves. When taking air at the full stroke of the high pressure cylinder, the ratio of expansions is 2·7 and when at ¾ stroke the ratio is 4. The author's calculation, differ from the preceding. In cutting off at half stroke in the hoisting engine, the ratio of expansion is 6·07.

Log = 1·803 + 1 = 2·803 ratio of gain × (90 + 13·44) = 289·942 ÷ 6·07 = 47·76 lbs. — 13·44 = M.E.P. 34·32 lbs.

34·33 lbs. ×283·5 square inches (area of large cylinder) = 9758 lbs. × 420 feet per minute (70 revolutions) = 4,098,360 feet-lbs. ÷ 33,000 = 124·21 indicated horse power derived from 178·95 cubic feet of air compressed to 90 lbs. per square inch at 60° F. This gives the value of a cubic foot of air compressed to 90 lbs. per square inch at 60° F. as 0·6941 indicated horse power. And 0·6941 × 184·6 cubic feet, the full amount of compressed air delivered by the compressor at 110 revolutions gives 128·13 indicated horse power at 60° F. Now, if we add to 0·6941 indicated horse power 46·2 per cent., we represent the increase of volume due to the expansion of the air from 60° to 300° F. = 0·6941 + 0·3206 = 1·0147 indicated horse power = value of 1 cubic foot of cold (60°) air if heated to 300° F. Then 1·0147 × 184·6 = 187·32 indicated horse power. With the compressed air heated to 350° F., we have 199·75 indicated horse power.

In my computations of these values, the expansion, at the given ratio, is assumed to take place in one cylinder (*i.e.*, the low pressure cylinder), and no credit is given for the re-heating of the air at the intermediate stage between the high pressure and low pressure cylinders, nor for any benefit derived from the hot air jacketing of both cylinders. I consider that any advantages derived from those sources are counterbalanced by unavoidable losses in cooling, &c. The difference in the computations is doubtless occasioned by my deducting the atmospheric pressure from the mean pressure, as would be done in estimating the mean effective pressure of any non-condensing engine. The efficiency of the pump depends so much upon the temperature of the air as used, that particular attention has been given to the pipes to have them covered with suitable non-conducting material (magnesia and felting). By means of this covering we are using the air at a temperature of 260° F., and for the same reason the air pipe supplying air to the pump is only 2½ inches in diameter, the object being to have the air pass rapidly through the pipe from the heater to the pump, instead of having it move slowly in the pipe, and thus lowering its temperature.

The pump as now running cuts off at ¼ stroke of the high pressure cylinder, so that the ratio of expansion is 4. The temperature of the air entering the pump high pressure cylinder is 260° F. The pump is now running 70 single strokes per minute. To keep the pump running at this speed, one side (½) of the compressor is running at the rate of 82 revolutions per minute, so the cold air used, compressed to 90 lbs., is 68·47 cubic feet per minute. The pump is raising 700 gallons per minute (nearly 20 gallons per stroke), 175 feet. The water raised, 700 × 8·38 = 5866 lbs. × 175 = 1,026,550 feet lbs. ÷ 33,000 = 31·10 horse power.

The ratio of expansion being 4, the M.E.F. would be 48·01 lbs. × 314·6, the area of the large cylinder being = 15,082 lbs. × 175, the speed per minute ÷ 33,000 gives 79·96 initial horse power. Taking the power developed at 350° in round numbers as 200 horse power and 300 horse power as the theoretical power of the water, we have an efficiency of 66·66 per cent. To secure this, an expenditure of one cord of wood is necessary, costing (say) $4·50.

Therefore, with water charges per day of	$21·28
One cord of wood for heating	4·50
Makes total for 200 horse power	$25·78

or 12·89 cwt. per horse power per day, an apparently very high cost, but it must be remembered that fuel here is scarce, and is becoming more so, and the distance it has to be hauled is continually increasing. The author has endeavoured to present *facts*, as far as possible, based on a great number of experiments conducted by Mr. A. D. Foote and others associated with him, to whom he is indebted for full information in regard to the same.

* A paper read before the recent meeting of the Institution of Mining and

SOUTH AUSTRALIAN LETTER.

(FROM OUR OWN CORRESPONDENT.)

ADELAIDE, MARCH 17.

THE most recent gold discoveries in the Talunga district, near Blumberg, are being developed in a most satisfactory manner. The diggers are "dollying" out gold from some of the claims at the rate of 6 to 10 ounces to the ton of veinstone, and this in such a rough way that the tailings have been found to contain from 5 to 7 ounces to the ton in addition. The Black Snake Mine (taken up by an English company) is in this neighbourhood, but though likely to prove quite payable is not in this particularly rich belt. When this district is properly developed it will in all probability equal anything in West Australia. Then 200 miles farther north there are mines at Wadnaminga turning out very rich stone. Again, a few miles to the east is the gold field of Taltabooka, which is a most promising district and admirably situated for mining. Still nearer the eastern border of our colony there are the Lux and Queen Bee Gold Mines; the former under offer on the London market, and the latter just about to start the new and complete crushing plant which has lately been erected. The prospects of both these mines are very good. The gold mines of Nackra or Paratoo are turning out remarkably well; a trial of some good stone lately from the depth of 120 feet gave a return of over 7 ounces of gold to the ton.

Old Echunga seems likely to make quite a fresh start. As the work goes on fresh developments are made which encourage the hope that rich and permanent reefs may be opened.

The case of the Angipena Mine in the north, and which was alleged to have been "salted," was tried at the Supreme Court, Adelaide, and after lasting six days the accused was found guilty and received a sentence of 18 months' penal servitude. The "salting" was done by picking out a lot of stone from a rich vein in the mine, and mixing it with the ordinary stone from the lode. The rich vein by itself gave returns of 6 to 9 dwts. per ton, and the other part of the lode from 2 or 3 up to 7 ounces. There is, however, a big lode carrying gold, and being of considerable extent it is still being worked by several independent parties.

ADELAIDE, MARCH 31.

A movement pregnant with issues of the highest importance to the future of our "Northern Territory" has recently been started. Two or three offers have been made to our Government by parties desirous of securing large tracts of land in the Port Darwin country, some with the view to opening it up for cultivation, others with the object of developing its mineral resources, more especially its known auriferous deposits. Of these last, the most important appears to be that initiated by Mr. Pritchard-Morgan, M.P. for Merthyr Tydvil in the British Parliament. This gentleman, after an extensive experience in gold mining in Australia, went to England and developed gold mines in his native country—Wales. I regret having missed the opportunity of a promised introduction to him before he left, but am not the less pleased to learn that he obtained most valuable and important concessions from our South Australian Government, by which he was enabled to secure several thousand square miles of land, through which a great belt of auriferous country is said to pass. Many persons who know the country hold the opinion that when fairly exploited it will prove as rich in gold as West Australia. Indeed, since Mr. Morgan was in Adelaide news has come down of a new discovery at Wandie—a reef from which gold at the rate of 50 ounces to the ton of stone has been got. Much of the land secured by Mr. Morgan is the pick of the country, both for grazing and for cultivation, abounding in buffaloes in some parts, and capable of growing tropical productions as sugar, rice, probably also tea, indigo, and many other things. If Mr. Morgan succeeds, as I sincerely hope he will, in forming a company with a sufficient capital to develop this great country, I believe it will prove as profitable an investment as anything that has offered in Australia, the gold mines of West Australia not excepted. And here there is no fear of such complications as have arisen in the Transvaal or in Venezuela. The climate is certainly tropical, but coloured labour can be procured, and Europeans, if they avoid drink, can generally stand the climate by taking due precautions. I have always maintained that our Northern Territory is one of the most valuable portions of the province, and I sincerely hope that Mr. Pritchard-Morgan's enterprise may result in proving my opinion to be correct.

As for the gold mines in the more settled southern parts of South Australia, the news from all quarters is highly encouraging. Several persons have started, or are about to leave for London, with the hope of floating mines in the Great Metropolis. It is possible that all these parties are not equally suitable for the business they have undertaken, but I suppose they and their friends are men of great faith. In the event of intending purchasers wanting an expert report on any properties in South Australia, I shall be glad to furnish it on the usual terms. I may safely say that my acquaintance with the mines of the colony is at least as extensive as that of any other person.

The old Barossa gold field also, about 30 miles from Adelaide, is being most satisfactorily developed, and two or three very promising reefs near the original Lady Alice are showing very payable stone. The Hamlin Freehold Mine is turning out rich quartz, and only a couple of thousand or so of capital is required to bring it to the paying point. There is plenty of likely country around yet undeveloped as there is in other parts of the colony. Echunga is steadily progressing, and given sufficient capital will recover something of her pristine splendour.

The new manager at Nillinghoo is very pleased with the appearance of that mine, which is expected to commence crushing operations before long. The new machinery at the Queen Bee Mine, comprising a dry crusher and a complete Tierra Sica plant, will be ready to commence operations in about a month. 1500 tons of payable stone are at grass.

The new Wadnaminga Mine has developed spendidly, and it is probable that a large area of rich ground adjoining will be secured and offered in the London market. It is one of the best properties I have seen in South Australia, proved to the depth of 140 feet, and carrying gold in a reef 3 feet wide for a mile in length, averaging probably at a moderate computation 1½ to 2 ounces to the ton of veinstone.

I may add that some mining men in New South Wales are so convinced of the value of our Northern Territory that they have sent over Mr. Neilley, who has also secured a large area of land in that part of the province. This is not unlikely to lead to the completion of the trans-continental railway line to Port Darwin

OBITUARY.

DEATH OF COLONEL NORTH.

IT is with feelings of the deepest regret that we have to announce the death of Colonel J. T. North, which occurred suddenly at his offices, No. 3, Gracechurch-street, E.C., on Tuesday afternoon. The deceased gentleman was presiding at a meeting of the directors of a Nitrate Company, when he suddenly fell back in his chair, and expired almost immediately. On Wednesday morning an inquest was held on the body, when death was stated to be due to heart disease, and the jury returned a verdict of "Death from natural causes."

Colonel John Thomas North was born at Holbech, near Leeds, and in his youth was employed in the engineering department at a local iron foundry. The turning point in his career was about 20 years ago, when he went out to Chili, for the purpose of assisting in the erection of some machinery at Tarapaca, being then in the employment of Messrs. Fowler and Sons. While thus engaged the deceased gentleman's attention was attracted by the nitrate fields of South America. He at once realised the tremendous value of these fields, and was soon convinced that a big nitrate trade could be opened up, not only with his native country, but also with other parts of the world. The trade was established in a very short time, and ever since Colonel North has been successful in all his various undertakings. Although he had only been in England for about the last 10 years, the deceased had made himself a very prominent figure in the financial world; and the great interest he displayed in the development of the nitrate industry earned for him the enviable title of "The Nitrate King." The first company to make its appearance was the Liverpool Nitrate Company, the promotion of which was followed by the formation of the Primitiva Nitrate Company. He next set himself the task of reorganising the Nitrate Railways Company, the shares of which rose to a high price in the belief that the line would have the monopoly of serving the nitrate district. At that time his name was known almost wholly in connection with success, and few men could boast of a larger following in City circles. His nitrate companies went up on the market to enormous premiums, and for a short time there was a veritable nitrate boom. That the high estimate of market value has not been maintained in recent years is a matter of common knowledge; but the Colonel always emphatically repudiated any suggestion that he had adversely influenced the market for his own personal gain. Among other enterprises he has either launched or been closely concerned in promoting the Pacchа and Jaspampa Nitrate Company, the Arauco Company, the Bank of Tarapaca and London, the Colorado Nitrate Company, the Lagunas Nitrate Company (first the Lagunas Syndicate), the Port Talbot Railway, and the Ripanji Quicksilver and Silver Mines. With the exception of the Bank of Tarapaca, he was Chairman of all the companies named. In more recent years he interested himself in the gold mining industry, and was one of the vendors of the Londonderry Gold Mine. In addition, North's Navigation Collieries were promoted by the deceased.

INDIAN MINES' OUTPUT FOR APRIL.

DURING last month the output of the mines in Mysore was 26,866 ounces, showing an *increase* of 695 ounces as compared with the preceding month, and an *increase* of 6467 ounces as compared with the corresponding month of 1895. The production since the beginning of 1892 has been as follows:—

	1892. Ozs.	1893. Ozs.	1894. Ozs.	1895. Ozs.	1896. Ozs.
January	11,674	16,844	17,026	19,672	22,442
February	11,780	16,656	15,803	19,358	27,508
March	11,579	17,463	16,080	20,257	25,470
April	11,813	18,287	15,551	20,399	26,866
May	12,488	17,922	16,543	20,797	—
June	11,847	16,879	15,459	20,839	—
July	13,277	16,676	18,271	19,280	—
August	14,854	16,692	19,073	20,704	—
September	5,529	17,060	18,911	21,502	—
October	15,922	17,440	19,119	22,301	—
November	15,942	17,557	18,825	22,545	—
December	16,435	17,659	19,068	22,652	—
Total	163,140	207,135	209,729	250,306	102,991

The outputs of the individual mines for the past six months have been:—

	Nov. Ozs.	Dec. Ozs.	Jan. Ozs.	Feb. Ozs.	Mar. Ozs.	Apr. Ozs.
Ooregum	6,045	6,207	6,180	6,170	6,057	6,119
Mysore	6,029	6,123	6,349	10,145*	8,934	8,969
Champion Reef	6,228	6,237	6,291	6,304	6,503	6,643
Nundydroog	3,315	3,321	3,323	3,781†	3,550	3,563
Coromandel	—	—	—	—	—	452
Nine Reefs	—	110	—	—	—	—
Mysore Reefs	222	116	179	153	114	81
Mysore W. and Wynaad	706	538	544	654	701	703
Balaghat Mysore	—	—	120	211	312	336
Total	22,545	22,652	22,442	27,508	25,470	26,866

* Of this 2850 ounces are the January balance.

† 250 ounces from the previous clean up are being forwarded.

WESTERN AUSTRALIA'S GOLD OUTPUT FOR APRIL.

Field.	Quantity.	Value.
Coolgardie	9,762 ozs.	£37,098
Murchison	5,584 ,,	21,219
Yilgarn	1,161 ,,	4,411
Dundas	174 ,,	663
Ashburton	90 ,,	342
Total	16,771 ,,	£63,733

SALEM IRON ORE.—The Government of Madras has concurred with the Chamber of Commerce and the Board of Revenue in considering that it is desirable to send a sufficient quantity of Salem iron ore to England in order that it may be smelted there, and that a report on its quality, composition, and commercial value may be obtained. Before, however, taking further action in the matter Government resolves to address the Imperial Institute, in which arrangements appear to have been made for the special examination of Indian economic products, and to which, under the orders of the Secretary of State, all requisitions involving the investigation and analysis of Indian products by experts have to be referred. The secretary to the Imperial Institute will accordingly be requested to state whether that body desires to have the ore in question sent to them for the experimental purposes above indicated, and, if so, what quantity of ore will be required.—*Indian Engineering.*

THE MONAZITE DISTRICTS OF NORTH AND SOUTH CAROLINA.*

By C. A. MEZGER, M.E., Shelby, N.C

THESE districts are limited approximately on the north by the railroad from Salisbury to Ashville, and comprise the counties of Alexander, Catawba, Burke, Rutherford, McDowell, Cleveland, Lincoln, Polk, and Henderson, in North Carolina, and Greenville, Spartanburg, Union, and York, and South Carolina. The occurrence of monazite in Amelia Court House, in Virginia, belongs evidently to the same geological system, as its distance from the Alleghenies corresponds with that of the above-mentioned districts, and all the stratification runs parallel with those mountains.

I do not hesitate to give to the whole formation the name of eye-gneiss (*Augengneiss*), and to pronounce it identical with the eye-gneiss of Rio de Janeiro, in Brazil, concerning which a somewhat voluminous literature exists. It is a very curious formation; its characteristics consist in layers of gneiss, as a rule rich in mica, bent around lenses of granite, mostly of coarse grain.

The proportion between the thickness and the length of the lenses varies between 1 to 1 and 1 to 20 or more; they range in diameter from 1 foot to 20 or more; perhaps even considerably more, as will be seen further on. The place where this formation is most beautifully shown is a railroad cut about 100 yards east of the station house of Claremont, on the Salisbury and Ashville line. Here the proportion of thickness to a length of the lenses is about 1 to 1½, the diameter being about 1 foot, and the regularity very great. The building stone at Morgantown, of which many stone steps are made, shows the structure very well. It consists of lenses, the proportion of which is about 1 to 10, the thickness being only a few inches.

For the first mile from Morgantown the banks along the road leading from that place to Shelby likewise show the structure well, though with some irregularities. Near Cleveland Springs, 3 miles from Shelby, North Carolina, the lenses have a size of from 3 to 6 feet, but here the formation is utterly unrecognisable, as the lenses are nowhere visible, and the surface of the rock is always the gneiss, showing, however, the bending and the waves characteristic for the formation. In the mountains on the line between Cleveland and Burke Counties, we find the lenses, consisting of a perfectly disintegrated fine-grained granite, containing some 0·2 to 1·0 per cent. of monazite. The lenses attain several hundred feet in extension. The Rio de Janeiro formation, already mentioned, shows this difference; that the gneiss layers often appear (on the surface of fence posts, columns, steps, &c.), as fine as pencil-lines, only 1 or 2 millimetres thick. I have never found them so thin here. In Claremont they are about 1 inch thick; in Cleveland Springs, and all around Shelby, nearly 1 foot, often more; and in the mountains, 20 feet and more.

The monazite, mainly a phosphate of cerium, lanthanum, didymium, erbium, thorium, yttrium, terbium, &c., often containing silicates, perhaps of the same oxides, and often developing argon, if treated with sulphuric acid, is contained in the granitic parts of the eye-gneiss, and has been found by me only in partly or wholly decomposed orthoclase, never in the fresh unaltered mineral. There can be no doubt that that monazite which now forms the object of a quite important industry has undergone a concentration in the creeks to such a percentage as permits profitable work. I have found, however, many places where the rock will pay for crushing and concentrating; the more so as, according to my experiments in these cases, the monazite appears to be considerably purer than the material obtained from the creek sand, which is mostly mixed with garnet (pyrope), chromic iron, zircon, a low grade thorite, diamonds (rarely, on account of their lower specific gravity, which causes them to go off with the tailings), and other minerals of the gravity of monazite. Gold also occurs quite frequently. Henderson County produces auerlite, zircon, and a large number of other rare and most interesting minerals, containing the oxides of the rare elements mentioned above. Curiously enough, there is hardly any mention of this county in the works of Genth or Herr,† and comparatively few minerals are even mentioned by Dana as coming from this locality. There is reason to think that the richness of the monazite in thoria is greater than in soft material, which, during the process of natural concentration, is more easily and quickly disintegrated than the harder and poorer rock. I am much inclined to suppose also some correlation between the lens-formation and the curious occurrence in the same districts of corundum, beryl and plumbago, all of which are found in pockets.

The production of monazite for the trade takes place in a very crude way, the absence of all sizing in connection with the concentration being the greatest fault. The operation consists in digging the gravel, shovelling it on an iron plate perforated with ¼ inch or ⅜ inch holes, and stirring what passes this screen with a shovel and much water into a box about 15 inches wide and 6 to 8 feet long. The coarse gravel is thrown away; the sand is worked through the box with shovels, somewhat in the manner of the German Kehrheerd, in which operation the lighter minerals are run off as tailings. The absence of sizing causes all the finest sand to run off also, so that of the product saved generally nothing will pass a sieve of 40 to 50 mesh. At the same time the coarsest sand, of nearly ¼ inch diameter, runs off also with the garnets. On an average, the product contains about 80 per cent. of monazite. Exceptionally, material carrying 90 or even 95 per cent. is shipped; but there is also some that contains no more than 50 per cent. Sands of between 80 and 100 per cent. command 10 cents per lb.; from 80 to 90 per cent. the price is 8 to 9 cents; from 70 to 80 per cent., 6½ to 7 cents; from 60 to 70 per cent., 5½ to 6½ cents, and below 60 per cent., 4 to 5½ cents.

The trade was pretty regular until April or May, 1895, when some sharp speculators caused a great disturbance, which greatly demoralised the business, especially in Europe, and allowed Brazilian sands to come in. At the same time the production of thorite in Norway increased very much, so as to make it difficult now to predict what will become of the whole industry in North Carolina. At present only the Welsbach Incandescent Light Company and a German firm are buying monazite in much reduced quantities. In connection with the curious and interesting formation of Augengneiss, and its moral bearing upon the relations between gneiss and granite, and upon the parageneis of minerals contained in enclosures of granite in gneiss, the following illustration may have collateral significance. In May, 1895, I made a trip to Burnet, Texas, to examine the celebrated Barringer Hill, in Llano County, about 15 miles west of Burnet. I traversed the whole country between the hill and Burnet on different roads, and found everywhere an extremely coarse-grained granite; but I crossed some strata of a gneiss rich in mica, and perhaps containing hornblende. I may here just suggest that its formation might also belong to the eye-gneiss; in this case, the eyes would have diameters of miles.

The granite contains many quartz veins from 1 inch to several feet in thickness, and the hill shows a swell about 100 feet in diameter, in which the quartz kernels, as well as those of orthoclase, reach the size of 6, 8, and more feet in thickness. Crystals of orthoclase of 1 foot and more, and crystal of quartz of 4 to 5 inches, are not rare. Very curious is the fact that the feldspars leave their impressions in the quartz, while the latter leaves its impressions in the feldspar, which shows that the crystallisation was, on the large scale, entirely contemporary. Here, also, the fresh red orthoclase contains nothing, but the kaolinised orthoclase contains, I may say, minerals of all the rare metals enumerated above as occurring in monazite, besides molybdenum, beryllium, zirconium, fluorine, and argon. The mica occurs in flat masses, some inches in thickness and one or more feet long, mostly decomposed. The whole called to my memory vividly the discussion by Professor Sandberger of the veins of the Kinzigthal, in Baden, in which he demonstrated that the decomposition of the micas was the source of the formation of the ore deposits. In that case the fresh micas, and probably the feldspars also, contained all the constituents of the veins (lead, copper, nickel, cobalt, &c.), and the decomposed micas contained considerably less, or nothing at all, of these metals. I do not know whether any analyses have been made with adequate accuracy of the Burnet micas and feldspars. All the oxides of the rare metals may easily escape detection, especially if they occur in minute quantities. Some analyses of yttrialite, thorogummite, nivenite and fergusonite, published in the *American Journal of Science* in December, 1889, are given by Dana. Other analyses have not come to my notice.

* A paper read before the American Institute of Mining Engineers.
† Mineral Industries of South Carolina for 1893.

VICTORIAN GOLD MINING.

By THOMAS CORNISH, M.A.I.M.E., Author of "Our Gold Supply," &c.

THE ridiculous talk that we so often hear from thoughtless youths and full grown men, who ought to know better, about fashions in gold mining, has been as contemptible and childish in tone as it is imbecile in matter. There is some amusement in listening to women's conversation about the latest fashions in hats or dresses, because they are expected to change with the seasons or weather. Pretty prattle of that kind tends to lighten our worldly cares for awhile, even while lightening our pockets, but to hear business men discussing about this, that, and the other gold district coming in or going out of fashion is simply unmanly.

There is no fashion in sovereigns that are coined out of gold obtained only from gold mines. Sovereigns can only be made out of the pure metal—gold—which all humanity are striving to get—mostly from each other, instead of from the earth. When men go to their bankers to obtain gold, they don't ask the question if the gold came from a fashionable district: but when speaking of getting gold from a mine they want to know if the district in which the operations are to be conducted is fashionable. This is in a measure accountable from the number of men of all classes who have lately taken up gold mining, or speculation in mining companies, more as a passing craze than as a legitimate enterprise and honourable industry. They will oftentimes state plainly that they don't care about the mine, or whether it will pay or not, so long as it is in a fashionable district, and they can dabble in the stock, or make money by palming off a so-called gold mine on their friends or an unsuspecting public.

The annual meetings that are taking place of some of the late fashionable mines are not hopeful reading for many of the investors, except in a few instances where good luck and good management have brought them into success, or on the road to it. In the meantime Victoria still holds the lead as the largest and most profitable gold producing colony, and with the splendid discoveries that are being constantly made in various parts of that rich golden colony, the fickle fashion will probably soon veer round to that quarter.

The mining on quartz lodes are being steadily followed down to great depths; thus on Ballarat we find the Band and Albion Consols, after paying dividends from alluvial to about £1,000,000, and from quartz lodes to £565,470, have taken a new lease of life after over 30 years' work. The main (No. 9) shaft has been deepened to 2000 feet, new pumping plant erected, levels opened at 1700, 1800, 1900, and 2000 feet, from which large bodies of proved payable ore has to be taken, and the grand old mine will soon be on the dividend list again. Its next neighbour south, the Star of the East, the dividend account is £276,000, has lately been adding powerful pumping appliances to No. 2 shaft, nearly completed, and will soon be increasing its output of ore and yields of gold from the various levels from 900 to 2000 feet, which will quickly be in full work, and, no doubt, returning its regular dividends. The South Star, next the above, is a specimen of steady pluck and enterprise. The company kept on sinking its main shaft for 10 years to a depth of over 2000 feet, and erected suitable powerful machinery at a cost of over £70,000 before getting payable gold to work effectively. The directors were satisfied that by perseverance they would ultimately get the continuation of the rich lodes in length and depth that had been so successfully worked by their northern neighbours. They are now being rewarded by good yields and regular dividends from the various levels opened and in work at from 720 feet to 2000 feet, levels having been opened at about every 100 feet apart. The energy and success of the South Star has stimulated many other companies in and around Ballarat to follow its example, and it is believed that numerous other mines that have been steadily carrying on progressive work for years past will soon be on a long lease of prosperity from dividends.

On the eastern section of Ballarat there are numerous local mines in profitable work from the Black Hill on the north for about 8 miles to the Great Buninyong Estate on the south, which is conducting its preliminary operations in a systematic and business-like way, under the supervision of the able experts who have brought the Star of the East, South Star, and other mines to a successful issue. This estate, over 800 acres, was successfully worked by co-operative parties in the early days, and gold to the value of about £350,000 obtained from it and about £140,000 paid in dividends. In consequence of a fire burning down one of the plants of machinery and stopping the works, and some hitch with the owners, this valuable gold estate was abandoned for over 25 years, and only lately restarted under most favourable auspices, with prospects of becoming one of the most profitable gold mines in Victoria.

The latest news from the mine, March 21, says:—"Contractors for erecting alluvial plant just about completed. Good progress making at quartz shaft. Now preparing for opening first level. Shall commence cutting chamber to-day, and a very short length of crosscut will only be required to reach the line."

The Great Buninyong Estate has six known quartz lodes traversing north to south through it, which will give over 6 miles of lodes to operate on, besides about 3 miles of rich alluvial leads or gutters to work. The company has only been in operation about six months, and the energy already displayed by the local advisory board, and the London directory has brought the company into the favourable condition of being an early producer of gold, and the next six months will no doubt bring this company into a most favourable position on the London market. This company acquired a valuable golden estate of large area, well proved, on the most renowned gold field of the world, with every surrounding necessary for economical and profitable development.

Along this belt of quartz lodes are numerous mines in profitable work to the north—viz., the Imperial, the Rothschild, the Tower Hill, numerous co-operative parties, Dalziels, Prince Regent, Prince Regent North, New Normandy, Speedwell, Llanberis Nos. 1, 2, and 3, Last Chance, Britannia United, Victoria, Sulieman Pasha, Black Hill, and others on the eastern reefs.

The belts of reefs at Elaine and Morrisons leading on to Egerton and Gordons, where the companies now at work, the Egerton, Black Horse, and others, and that have paid so well, are working at various depths to 1600 feet, are thus developing vast bodies of ore ground that will afford much profitable work for ages to come. Some important finds have lately been made, which if discovered in some inaccessible parts of the globe would have created great excitement. At Rokewood and the Pitfield Plains valuable discoveries have lately been made in quartz and alluvial. Thus we have sample specimens from O'Keeffe's claim giving 211 ounces 10 dwts. of gold, while others in the bank are nearly all gold. One ton treated at the Black Hill battery yielded 61 ounces. The Pitfield Plains are opening a large alluvial gold field likely to pay well, discovered about 30 years ago, and neglected until lately. From a new reef at Rhymney 4 tons sent to the Ballarat School of Mines yielded 100 ounces of gold.

At Bendigo, along the various well-known lines, satisfactory yields and dividends are the result of steady, persistent developments at the deeper levels, while not neglecting the shallower formations. The New Chum Railway at 2878 feet level, reef 9 feet wide, showing good gold averaging over 1 ounce of gold per ton. The Shenandoah, at similar great depths; last crushing 500 loads, 584 ounces. The South German, at Maldon, at 1200 to 1300 feet in depth; crushed for the month 1011 tons, for a yield of 1022 ounces of gold.

The long tunnel and long tunnel extended, in Gippsland, working at depths from 1000 feet to over 1600 feet, and still increasing, their depths average over an ounce of gold per ton, and have paid about £1,500,000 sterling in dividends. At Mount Wells, in the Omeo district, the average for the last year was 1 ounce 12 dwts. 18 grains per ton.

This and other new developments in conjunction with improving prospects on most of the older fields hold out great certainty of large profits on capital judiciously invested in Victorian gold mining.

FOUR AMERICAN ROLLING MILLS.

AT the meeting of the Institution of Civil Engineers on Tuesday last, under the presidency of Sir BENJAMIN BAKER, K.C.M.G., a paper on "Four American Rolling Mills," was read by Mr. Samuel T. Wellman. Four mills, typical examples of modern American practice, were described, in reference more particularly to the appliances, which during the past 10 or 11 years had been brought to a high degree of perfection, to save labour and time in the passage of the material through the successive processes. In American Bessemer steel works where rails were made, the three-high blooming mill was almost exclusively used, having proved its superiority for producing large quantities of blooms of one size. The two-high reversing mill was, however, preferable when many sizes of blooms and slabs had to be manufactured, as all sizes of squares and flats within the range for which the mill was adapted could be dealt with on one set of rolls. The tendency was in the direction of the manufacture at every works of all sizes and shapes, so that it seemed likely that the reversing mill would largely take the place of the three-high blooming mill. The use of the three-high, or Fritz mill was almost universal in the United States for finishing rails and other heavy bars.

At the Joliet Works of the Illinois Steel Company the rail mill was fitted with automatic machinery, and the blooming mill was equipped with Siemens regenerative ingot heating furnaces, and Wellman electro hydraulic charging machines. The ingots were brought in front of the heating furnaces from the converting works on wagons, and all the operations for dealing with them at the furnaces were effected by these machines, the power for driving which was stored in tank charged first with air to a pressure of 100 lbs. per square inch, and then with water until the pressure reached 400 lbs. per square inch. The ingot, on leaving the furnace, was carried on a wagon, driven by a wire rope, to live roller tables along which it travelled to a three-high Fritz mill with the three rollers fixed, the ingot, measuring 16 inches by 6 inches, being rolled in 13 passes to 7½ inches by 5½ inches. The bloom was carried over driven rollers to the bloom shear, where the ends of the bloom were cut off, and the remainder cut into two pieces, each of which was rolled into two rails. The scrap bloom ends dropped on a conveyor in the pit under the shear, by which they were lifted and dropped into wagons. The blooms now passed from the shears, first to the roughing rolls, at which they were manipulated by automatic machinery, then into the finishing rolls and on to the saws. The greatest output of the mill in 12 hours had been 679 tons of billets, and the best month's work 27,003 tons, the average output being about 500 tons per shift of 12 hours. The number of men employed was 35 per shift.

The rail mill at the South Works of the Illinois Steel Company, South Chicago, was equipped with a three-high blooming mill and finishing train, the ingots being heated in vertical gas furnaces of the Siemens type, arranged to use producer gas or crude petroleum. The ingots were drawn in and out of the furnaces by Wellman hydraulic cranes. The rail trains were 27 inches in diameter, and were fitted with lifting and tilting roller tables for carrying the bloom through the successive passes. The capacity of the mill was very great, 1025 tons of rails having been rolled in 12 hours, and the monthly output having reached 38,093 tons.

The new rail mill at the Edgar Thompson Steel Works was next described. Its capacity had hitherto not been fully tested, but a monthly output of 36,300 tons of rails had been reached.

The new plate mill of the Illinois Steel Company was the largest and most complete in the United States. The train consisted of two stands of rolls of the Lauth three-high type, capable of dealing with ingots 24 inches thick and weighing 7 tons or 8 tons. The heating furnaces were of the Siemen's type, and were charged by electro hydraulic charging machines. Electric cranes were used for lifting and moving the plates at the cooling beds, for dealing with them at the shears, and for loading them into the railway wagons.

GREAT BUNINGYONG ESTATE.—We are informed that the erection of the alluvial plant is completed, and that arrangements for resuming shaft work are now being proceeded with. At the quartz shaft construction of chamber at the 100 feet level is now going on and will be completed in a few days, when a crosscut to the lode will be started.

MINING IN NEW ZEALAND.

(FROM OUR OWN CORRESPONDENT.)

SINCE my last letter, there is nothing of any great importance to chronicle, with the exception that the returns of gold from the Coromandel and Kuaotunu gold fields, which are just to hand, are all of a highly satisfactory character, especially that of the famous Hauraki Gold Mining Company in the Coromandel mining district. For the month of February or during the four weeks ending Saturday, March 7, 340 tons of ore were treated for the yield of 2398 ounces of gold, which, calculated at the usual value per ounce—£3—gives a value of £7194, while the average stands at the high figure of 7 ounces 1 dwt. 15 grains to the ton, as against that treated for the month previous; 316 tons were crushed for a product of 2059 ounces, valued at £6177, the average then being 6 ounces 10 dwts. 7½ grains per ton. It will, therefore, be seen that the latest results from this mine are very gratifying, for with 34 extra tons of ore treated, there has been an increase in the value of £1017. At the new, or lowest level, the famous lode has been intersected, but as the run or shoot of gold is a considerable distance from this point of contact, it did not come as a surprise to find no gold; but there is every promise that when the level is advanced forward to the point where the shoot of gold should be to hand, that present anticipations will be quite borne out. However, the mine continues to look well, with every chance of a further improvement. The result of the Kapai Vermont Gold Mining Company's return came to hand to-day, and is as follows:—308 tons of general ore were treated for a return of 400 ounces of gold, which is not quite as good as that obtained for the month previously, when 464 tons were crushed for a yield of 647 ounces of melted gold. This company treat their ores by wet crushings and amalgamating plates; then the refuse tailings are subjected to treatment by cyanide. They are very successful with this method; at least, their free milling ores are well adapted, and very amenable to cyanide. At the present, and in conjunction with their present developments, they have commenced a low level, and have extended it a considerable distance, with the object of intersecting their lode at a greater depth. This level will afford backs on the lode ample to keep the company's mill profitably employed for some time to come. I look upon this mine as one of our most important producers, and with the assistance of capital, the company should be in a position to develop their property to that extent to enable them to get a refund of their outlay by substantial dividends to the shareholders. Another Kuaotunu Company, the Try Fluke, cleaned up for the four weeks as follows:—By cyanide they obtained 119 ounces 5 dwts., and by ordinary battery 116 ounces; total product for the month, 235 ounces 5 dwts. of melted gold. The last month's return was 187 ounces 5 dwts. These returns are thoroughly satisfactory, and, with additional capital for development of the two properties mentioned, they should become dividend payers.

Waitekauri Gold Mining Company.

This company's monthly return is again to hand, and I am sure it is very gratifying to find that there is a superior class of ore being passed through the company's mill. For the four weeks ending February 29, 135 tons of ore were crushed for a yield of 1101 ounces bullion, value £896 7s. 4d., the average per ton being slightly over £6 12s. 9½d. The last month's return was 1144 ounces bullion, valued at £929, from 179 tons, or an average of £5 3s. 9½d. per ton. Notwithstanding the scarcity of water, owing to the exceptionally dry season, the result of the operations for the month just closed cannot be considered otherwise than highly satisfactory. It must be borne in mind that the locality where the company's new reduction plant is now in course of erection commands a position where there should be an ample supply of water all the year through to keep their large mill continuously supplied. The mine never looked better than it does at the present time, and the reef in the Mann-Corbett level continues to advance on the lode, showing payable ore.

Another gold return has come to hand from the Kuaotunu district. The Great Mercury Gold Mining Company cleaned up their monthly crushing of 480 tons of general ore, which produced 292 ounces melted gold, whilst that obtained for the month previous was 286 ounces 6 dwts. melted gold from 385 tons of ore treated.

On Saturday, March 7, news arrived in town that a discovery of gold has been made in the King country on a block of ground acquired by the Government from the natives. The party of prospectors are bringing on a parcel of the ore to be tested here; some of the stone shows gold. In this famous King country the natives have a king ruling over their dominions, and have been very hostile to prospectors entering their territory. However, if payable gold has been discovered, the Government will take immediate steps to have the land thrown open for gold mining purposes.

In company with Captain Argall and Professor Pond, I visited the scene of the new discovery in the Tairua gold mining district, and I must admit that I was very agreeably surprised to find that the ore deposits unearthed by the prospectors, are of considerable magnitude. It is situated in the Tairua valley, and about 20 miles due east from the Thames, and about 4 miles from the east coast on the left hand bank of the Tairua stream, and at a point where the flat country terminates. I think it is the most accessable place that could have been found for a gold field. The Tairua Harbour is capable of accommodating any large ship, having ample depth of water to float in the heaviest machinery required from the place of landing. A splendid belt of flat land leads from the landing right up to the new discovery. Here there is a never-failing supply of water flowing past the mine, sufficient, I should imagine, to drive 1000 stamps if necessary, whilst, in addition to this, there is abundance of the very best of timber for building or mining use. There is no doubting the question as to the excellent facilities afforded here for cheap and economical mining, and there is no denying the fact as regards the genuineness of the rich discovery, as aforementioned; the flat country leads right up to within 100 yards of the mine, and from thence the hill rises to a height of 700 feet; looking north from this high eminence, a long range of broken hills can be seen for fully a mile in length. These hills are all embraced by the area taken up by the prospectors, which is 340 acres in extent, and which has been very appropriately designated the Broken Hill Special Claim. However, to give an idea of the deposit, we inspected the prospectors' first point of development, and found that they had put in a surface cut for a distance of about 18 feet; 12 feet of that distance was passed through quartz of an argentiferous character, with the well known blue sulphide thickly conspicuous in the ore; one glance at the quartz is sufficient to show that the deposit is of immense richness, whilst 2 feet 6 inches of the ore body shows exceptionally high class and of the same quality that was treated at the Thames School of Mines, as follows:—18½ cwts. treated produced 56 ounces bullion, valued at 25s. per ounce, or at the rate of £80 per ton. Well, there is apparently a good tonnage of this ore now in sight, and 500 feet to the south of this another cut has been put in for a length of 12 feet, which gave assay results equal to £10 per ton, whilst further to the south a face of ore 200 feet in width is showing, and from which very fair prospects are obtainable throughout. The next matter in connection with this particular deposit is that, although I made a rigid inspection to find the walls of the lode, none were perceptible. The quartz is lying just the same as if embedded in the centre of a vein, still there is nothing to show that a true fissure vein exists, and the only opinion I have is that the hill is one solid mass of ore, which, I believe, would pay handsomely to treat on the quarry system, for instance. No matter where a cut is put in, splendid prospects are obtainable for hundreds of feet, thus showing that the hill is one huge mass of auriferous ore; and until further developments take place, a definite opinion cannot be formed as to the continuity of the deposit at depth; but, judging by the outshow of ore, there should be sufficient to keep a mill profitably employed for some considerable time. To the south-west of this, and about two miles in the direction mentioned, another important and very rich discovery has been made by Messrs. Fleming Brothers. Four distinct lodes have been unearthed, varying in sizes from 9 inches up to 4 feet in thickness. The 9 inch lodes, of which there are two, are both specimen lodes producing specimen ore worth on an average fully 2 ounces of gold to the pound of stone. In Nature this ore and that of the Broken Hills are totally different; one is a brown stone in colour with a deep band of gold, fully 1 inch thick, laminating the ore; while that of the Broken Hills, which is only 2 miles distant, is a blue sulphide, bullion ore; of course, this can be accounted for. For instance, the two lode systems are quite distinct belts from one another, although trending through the same class or formation of sandstone. However, there is no denying the fact that the discovery made by the Fleming Brothers is one of exceptional richness, and must eventually prove of the greatest importance to this gold field. It is a strange matter, but nevertheless true, that there are thousands and thousands of acres of unexplored country in little New Zealand, and as time passes by new discoveries will be brought to light. In New Zealand there is an abundant and never-failing water supply, while our forests are densely packed with the very best of timber suitable for both building and mining requirements. This on a gold field is a boon in itself, and as these forests are not confined to a few acres, but extend to thousands of acres, mining here can be conducted on a most economical basis.

In my last letter I also referred to a parcel of ore brought in from the Whangamata district for treatment at the Thames School of Mines. This yielded at the rate of £20 per ton, which speaks well for the reef in the Phœnix special claim, from which this parcel was broken out. This section of reef system lies to the south of the Tairua, and embraces what I should say is the northerly continuation of the Waitekauri reef belt. The lodes are of large dimensions, and encased in defined walls, having all the features in connection with a true fissure lode. I think it is pretty safe to say that in the near future both the Tairua and Whangamata districts will prove bullion-producing districts of importance, and will eventually, with the assistance of capital, rank amongst the best.

At the present juncture we have in our midst two experts of German extraction who are touring our gold fields with the object of gleaning information regarding our auriferous strata, and otherwise seeking out suitable properties, with a view to investment. Their respective names are Messrs. Wichmann and Schmeisser. They are under the able guidance of H. A. Gordon, New Zealand Government Inspecting Engineer, who will pilot them through the various centres of mining, and otherwise furnish them with information quite foreign to them. From what I can gather, Mr. Schmeisser is inspecting on behalf of the German Government. It is to be hoped that their visit to this country will eventually bear fruit.

The Waihi Gold Mining Company cleaned up for the month, and, as can be seen, the low return compared with that of the past is not due to a falling off in the supply or quality of the ore; it is owing to the unprecedentedly dry season that we have had in New Zealand causing a scarcity of water in all parts. Another drawback to successful operations was that the company's boilers were sadly out of order, and just at the very time when their services were most urgently required they broke down, resulting in the usual tonnage of ore not being crushed. During the four weeks ending March 7, 1950 tons of ore were treated for a yield of £6602 worth of bullion, and from tailings treated £664 was extracted, bringing up the total for the four weeks to £7266, or an average of £3 7s. 8½d. per ton. Last month's return, which was also for five weeks' run, was also affected, though not to such an extent as has been the case with this month's operations. Last month 3060 tons of ore were reduced for an extraction of £11,140, including £2405 for tailings. The tailings are now finished.

The Hauraki North (Coromandel) have cleaned up their first crushing for 98 ounces smelted gold.

The Waiotahi Gold Mining Company (Thames proper) treated 190 tons of ore from all parts of the mine for the highly remunerative yield of 233 ounces 13 dwts. gold. This mine has averaged fully 200 ounces of gold per month for a great number of years past, and judging by the extent of the developments, there is strong evidence of its continuance.

The Victoria Gold Mining Company (Thames) are steadily advancing their developments, and rich ore continues to come to hand at intervals.

The Thames Hauraki Gold Mining Company, recently registered in London, have commenced developments.

Karangahake district is gradually coming to the front, and this has all been brought about by the introduction of English capital and a general revival in the mining industry. The Woodstock Gold Mining Company are conducting active operations under the able supervision of their manager, Mr. John McCombie. The mill has to be kept running on the output from the mine for this month, when it is the intention to have the final clean up, after which this portion of the plant will be removed to give place to the company's new 40 head of stamps, which are to be erected.

The development of the mine is proceeding apace, and the latest news to hand is that the No. 4 level has succeeded in meeting with the Maria lode, which has since been driven upon for a distance of 30 feet, and proved to be of a highly payable character.

To extend the developments of the mine and prove the ore-body at a still greater depth, Mr. McCombie has commenced the No. 5 level with a view to intersect the Maria lode, which will probably be to hand in a few feet further driving. As regards this development I may add that I am very sanguine that when the lode is cut into at this No. 5 level that if the lode continues its characteristics it will be of the same quality, if not better than that met with on the higher levels, and I am deeply impressed that as all the other levels now in progress continue to penetrate all new and intact country, still further improvements will be evidenced. This should interest English investors, whom, I may say, have acquired a valuable property,

By this outgoing mail Messrs. Gabriel Lewis and Co., in conjunction with Messrs. Edwards and Morris, of Auckland, are sending home details and maps of a large area of amalgamated properties in the Karangahake district for flotation on your market. The property in question is known as the Leap Year Special Claim in the Ohinemuri district. It comprises an area of 76 acres 3 roods, and embraces the Bulletin, Bullion, and Bullion Extended, Goldbeater, and Rachel License Holdings. It is without exception excellently situated, being on a section of untried, but nevertheless gold bearing, country. Three distinct ore bodies have been unearthed, all of which are responsible for fair assay results. I may add that the property lies to the south of the Earl of Glascow, Wealth of Nations, Crown, and Talisman companies. As I am closing my letter, the Monatairi Gold have secured another haul of 80 lbs. specimen stone. There are promising indications showing in the reef, that leads to the belief that the run of gold will be of considerable extent. The stone termed specimens should be worth 1 ounce of gold to the pound of stone. It may be mentioned that the company have a stretch of fully 800 feet to drive upon this lode. This information should be of the greatest importance to the English shareholders.

Another property in steady development here is the Fame and Fortune Gold Mining Company, worked by the aid of British capital.

For some time past they have been engaged in driving a low level to intersect a winze sunk on a rich lode, and which had to be abandoned owing to the influx of water. Here it is anticipated that a high grade ore will be to hand.

The New Whau Company have struck gold in their low level tunnel, which gives promise of leading to something of importance.

The Monowai Company expect to clean up, under the French treatment of their ores, by the end of the present month. Mr. French expects to make a complete extraction of gold and copper. If such should be the case the company possess a valuable property.

MINING IN CORNWALL AND DEVON:

NOTES ON MINING IN THE WEST.

(FROM OUR SPECIAL CORRESPONDENT.)

A PROSPECT of a settlement of the dispute between East Pool and Wheal Agar has so often seemed likely in the last few months, that shareholders are scarcely likely to place much reliance on even the present indications, and until the purchase money has been actually paid there will be the fear of some herring thrown across the trail. At this moment, however, everything is looking "kindly"; East Pool shareholders have accepted the offer of Wheal Agar to leave the question of price to arbitration, and within a few days it may be anticipated that the agreement to arbitrate will be signed. Although there have been, in the opinion of most people, faults on both sides in this unfortunate dispute, both are to be congratulated on having towards the conclusion shown a conciliatory spirit, and assisted in bringing the thing to a head. East Pool people had very little alternative though but to accept the resolution of their neighbours, or else close their mine. It was clearly shown that with the water rising throughout the whole district as it is now, the men would very soon have been driven from those higher levels, which have produced sufficient arsenic and tin to keep the balance on the right side of the accounts. There is already some talk as to who the arbitrators are likely to be, and though that has probably not been discussed as yet certain names have been mentioned, and it is suggested that possibly the two committees may be able to agree on one man. Among those who have been named as possible arbitrators are Mr. Pendarves and Mr. Freche-ville, both of whom are thoroughly well acquainted with Cornish mining, and would be able to appreciate any particular points put before them. We shall hope to hear before very long that both the engines have been put to work.

SHAREHOLDERS in the Basset Mines (Limited) held their first annual meeting on Tuesday, when Mr. Frank Oats, the Chairman, took occasion to reproach those loud-voiced patriots who have been prating so long about the necessity of supporting the mining industry, but have not come forward to take shares even in a proved mine such as Basset. The worst foes of Cornish mining are those of its own household, as has been demonstrated in connection with the East Pool-Wheal Agar embroglio. Recently the management have had a recrudescence of the water difficulty, owing to the burning of the engine house at Marriott's shaft and the stoppage of West Frances; and Captain James is not yet in a position to say how far the last named circumstance will affect the workings. Marriott's shaft is to be cut down, but the directors have not yet decided as to the nature of the machinery to be purchased for it. Captain James took occasion to reply to some rather acrid criticisms on his policy which have recently seen the light. He remarked that some of his self-constituted advisers had advocated going on at South Frances with the old shafts, but he refused point blank to be a party to any such arrangement. The shafts have, in Captain James' picturesque phrase, "various corners and gim-cracks," and he estimates that to work them would entail a cost of £1000 a year more for each engine. The manager also refused to adopt what may be called a philanthropic policy—in other words, he will not consent to the conversion of any portion of the sett into relief works at the expense of the shareholders. In this he showed a wise discretion. It is not desirable, either from the point of view of the philanthropist or the man of business, to make the organisation of charitable relief a part of the work of a mining company.

AN improvement is reported at Blue Hills in the 100 fathom level end. The lode is said to be 4 feet wide, and of fair value. If this opens out well—and it is just under the shoot of rich ore in the 80, the threatened closing of the concern may be averted. The meeting will be held in about a month's time.

SUPPORTERS of the conversion scheme for Killifreth confidently expect to carry it at the meeting to be held on the 14th inst., though opposition is pretty sure to be manifested by some of the shareholders. Lord Falmouth's representative is to be waited on by a deputation with a view to a new lease on satisfactory terms being obtained, and it is not anticipated that his lordship will raise any difficulties.

EXTRAORDINARY general meetings of Carn Brea and Tincroft will be held on Friday, the 15th. A hope is expressed that adventurers will attend to hear any explanation that may be given as to the amalgamation and Memorandum and Articles of Association.

The directors of the CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA (LIMITED) have declared an interim dividend of 10s. per share on the ordinary shares on account of the year ending June 30, payable on May 22.

MEETINGS OF MINING COMPANIES.

LONDON AND WESTRALIAN MINES AND FINANCE AGENCY, LIMITED, AND THE BRITISH WESTRALIAN MINES AND SHARE CORPORATION, LIMITED.

AN extraordinary general meeting of the shareholders of these companies was held on Tuesday, at the Cannon-street Hotel, E.C., for the purpose of meeting Mr. PRITCHARD-MORGAN, M.P., upon his return from the West Australian gold fields.

The CHAIRMAN said: Perhaps I may explain, first of all, that this is an informal meeting, there being no business to transact. My task to-day is a very light, but, nevertheless, an exceedingly pleasant, one, since it is my duty to introduce Mr. Pritchard-Morgan, M.P., who has only returned within the last few weeks from his visit to the West Australian gold fields, whither he went some six months ago on your behalf. Your directors thought you would much prefer to meet Mr. Pritchard-Morgan and hear his impressions of West Australia, rather than receive the same in the form of circulars, which so often get cast on one side. Hence the shareholders of both the London and Westralian Mines and Finance Agency and the British Westralian Mines and Share Corporation—which, as you are aware, work together—are called here to-day. I would only say that I am sure after you have heard Mr. Pritchard-Morgan's account of his tour, and his opinion of our properties, you will see that there is a very promising future before us, and that now, practically, we have a dividend in sight—I will not say whether it is a short sight or a long sight. (A laugh.)

Mr. PRITCHARD-MORGAN said: As you are aware, I left England on October 10 for West Australia, accompanied by my partner, Mr. G. W. Hall, and following us by the next steamer was Mr. James Roberts, an experienced prospector and miner, who had been off and on in my employment in North Wales for 10 years, and who had had experience in various other parts of the world as a gold miner. Following him was Mr. A. Savill, a practical engineer, who is taking charge of and superintending the erection of the machinery. It is as well, perhaps, that you should know that Mr. Hall and myself hold a large pecuniary interest in both companies, and it necessarily follows that we have been most careful in the selection of properties, and that we are economising, as much as possible, the expenditure of the companies' capital. Before making any purchases whatever we examined in all over 100 mines. Many of them were placed under offer to us, but were not deemed worthy of purchase. At Hannan's we took up what may be truly considered a prospecting area, because nothing had been done upon it. It is what is known as a good position property, and has the advantage of containing 100 acres. Upon this we are doing some developing. The last cable received from Mr. Hall stated that important developments were expected daily. We first of all examined the Yilgarn gold field, which embraces an area north and south of Southern Cross of about 100 miles. Parker's range, to the south, has some good surface shows. Southern Cross has several good mines, full particulars of which we obtained for future guidance. At Mount Jackson we are watching the development of some properties. The Dundas gold field commences, roughly speaking, 150 miles south of Coolgardie. There are three or four main lines of reef there, and one property has been purchased by Dr. Simon (the French expert). We are keeping an eye on one or two properties there. The drawback with regard to water will, doubtless, be overcome in time. 75 miles north of the Norseman we reach the new Mount Morgan and Woogemoola district. There are several mines opening up here with more or less promise. The country is highly indurated and disturbed, the lodes making and breaking in erratic ledges. Some prospecting has lately been done on the north-east side of Lake Lefroy. These districts were thoroughly examined and full particulars taken of them. Leaving the auriferous belt around Lefroy, we enter the granite country, and on to the land held by the Hampton Plains Company. We examined all the properties in and around Coolgardie proper. Some of the stone there is excessively rich. We next visited the 25-Mile and Dunnsville, taking the Wealth of Nations in. We obtained options on some of the mines there; but more development work will have to be done before we should feel justified in making any purchases. Leaving the 25-Mile, we go through a dry and barren country until the 45-Mile is reached. From the 45 Mile to the Black Flag some good timber is passed. Here the Black Flag Proprietary is doing large development work. The formation, or lode, or whatever it may please persons to call it, is full of carbonate and black oxide of manganese. They have the advantage here of water, which is encountered in sinking near the Lake. We pass the 21-Mile on the way back to Coolgardie, and many of these mines are held by companies floated in Scotland. Kalgoorlie, or Hannan's, is the next place to be spoken of, and here we are in a region which can be talked about with confidence and reckoned among the great gold fields of the world. We go through a series of gullies and flats, which will produce by dry blowing more gold than any alluvial district in the colony. This gold unquestionably came from disintegration of rich leaders which feed the formation. The formations themselves and the iron stone lodes run approximately north and south. The formations are infiltrated sediment or the *debris* of perished lode matter. They vary in their mineral constituents just as an ordinary lode will do in various parts of its course and with the country which encloses it. In one mine the country rock is decomposed diorite until water level is reached at less than 300 feet. Then the country is ordinary green diorite, and the formation changes into quartz lodes, carrying pyrites, blende, and galena, the gold being associated with the galena. Carbonate of copper abounds in the formations, which are called green lodes. These contain silver as well as gold. In another part of the field the metals associated with gold are oxides of iron and manganese. The Lake View and Great Boulder are further south than the last mines to which I referred, and slightly further east. It would be invidious in me to express opinions as to these properties; they are sufficiently well known to speak for themselves. This district is not half prospected; but among a large number of duffers there will be some marvellous mines. The 90-Mile district we approach by the Cain Grass swamp. Eight miles beyond there is another group of mines. Menzies is unquestionably a fine reefing field—one of the finest yet discovered. It is the centre of a large auriferous region, the extent of which is not yet quite accurately known. There are, of course, here a large number of duffers in course of development and sale; but, on the other hand, there are some of the richest reefing shows in the world. The reefs will, in my opinion live down, and many of them, so far as they have gone, are far better in depth than on the surface. There is one mine there which has not yet found its way to the English market, and probably never will; it is held colonially. The stone coming out of the footwall side at Christmas time was honeycombed with gold, and the lode for 5 feet will mill quite 5 ounces to the ton. At the bottom of the shaft it is worth double that. In one part of the mine the lode is much larger, but the gold, of course, is more disseminated, and is not quite up to 10 ounce stuff, but is exceedingly rich. There are other equally good shows there. There are a number of mines or, rather, prospects outside Menzies. There is not sufficient vigour displayed in some parts of this district. Niagara is north-east of Menzies, and around here are some promising prospects; work is going on and we shall hear more of this district later. We inspected several properties there and near Yerilla. We purchased one property—the North Star—in the Mount Malcolm district. As far as it is opened up it will average 3 ounces to the ton, but in the bottom of the shaft and drive it will go higher. There is abundance of water close at hand, and since I returned from Australia we have struck fresh water in sinking at 70 feet, and at that depth it has risen 3 feet in the shaft. Mr. Hall writes since I left that in his opinion ½ ounce to the ton will more than clear expenses. We have a small battery on the road for it, and are sending out more stamps. These will be erected on the North Star at once. From a report just put into my hands by an expert who has visited the property, it is stated that, from numerous tests taken from the reef and outcrop, the milling value of the ore is estimated to be over 3 ounces to the ton. We then visited the Mount Margaret, and subsequently Mount Weld. At the Red Flag some properties are taken up, and that district will probably be heard of before long. The Red Flag, Hawk's Nest, and district is a promising alluvial field. Where the gold fields of West Australia end it is difficult to say, but 60 miles beyond Mount Weld, across the Spinifex Desert, there is another belt of auriferous country, well timbered, but so far waterless. Some fine specimens have been brought in by some men who could not remain there as there was no water for their camels. They will, however, no doubt, sink for water, and news may be heard of this remote region later on. My attention was called while in Brisbane to what appears to be an exceedingly promising property, not 1000 miles from the celebrated Mount Morgan Mine. I sent prospectors there. It is entirely virgin ground, and it is one of those chances which occasionally turn out successful. Not more than £200 or £300 of the companies' money will be expended in this direction, and that will be for practically testing the ground and sending a parcel of ore away for treatment. It is always misleading to base any calculations on mere assays. If this chance does come off it will be a 20 to 50 to 1 profit. Now, with regard to another matter, I opened negotiations with the South Australian Government, and expended over a month in inducing them to consider the question of granting me a concession of a large area of country known to be not only auriferous, but to contain other precious as well as base metals. Not only have I obtained the exclusive right to prospect over these 5000 square miles, or something like 3,000,000 acres of land, but I have also secured the surface rights. The area is in five blocks which do not all adjoin one another as shown by the plan in my hand, and the Government, after considerable negotiation, have agreed to allow me to expend the whole of the money on one block, whilst the others remain secured. I have the strongest evidence of the existence of gold in two of the blocks, and there is also reliable evidence of the value of the others. The surface rights, I believe, will be of great value. On some of the tablelands as much as 3 tons of maize have been grown to the acre. Sugar, coffee, and all tropical and semi-tropical products can be grown there. The country is well-watered and timbered, and grass is abundant. Three of these blocks adjoin the proclaimed gold field, the average of which has been and is over 2 ounces to the ton. Some of the best of the grass lands are situated within easy distances of the railway. Port Darwin, which is acknowledged to be only second to Sydney Harbour as a port, is within easy distance of Calcutta, and horses can be bred on the concession and a market opened for them in India. In these days of preserved meat, depots and factories may be established there, but these may not come within the province of a mining company, although advantageous leases might be let, and, as the population increases, there will, of course, be a local market for the consumption of the various products raised. I look upon these concessions as of very great value. The Government of South Australia are equally well aware of their value, and have taken care to secure to themselves a proportion of the profits of the mines, viz., 5 per cent., or 1s. in the £. Port Darwin is getatable by the British India Company's steamers. There will be no difficulty in getting them to land any equipments we may send out. I have reports by the Government Geologist of South Australia, and by an explorer of high repute, who has been through these tracts of country, and seen unquestionable evidence of their gold-bearing capacity. The geological formation of some of the blocks is favourable to the discovery of precious stone. Coal is known to exist, and there is no reason why a large settlement should not take place. The climate, true, is warm, but it is preferable in many ways to parts of West Australia. To summarise: Your companies have acquired 100 acres at Hannan's (Hannan's Great Eastern). They have acquired 65 acres at Mount Malcolm, called the North Star, which is undoubtedly a valuable and proved property, every day's work justifying the purchase. The Queensland speculation I have no news of yet; I look upon it as an off-chance of making a big thing, or, on the other hand, of losing a small sum of money. We have secured a town site in the middle of Coolgardie, which is really the centre of mining transactions and will be for some time. It is in the highest part of the town, is a corner plot, and is, beyond all question, one of the most valuable allotments in the place. It measures 68 feet by 165 feet, having a frontage to two main thoroughfares. Upon it, I apprehend, the companies will build a joint office for the transaction of West Australian business. Perhaps, before sitting down, I may mention that the companies have various options open with regard to properties not yet sufficiently developed to justify purchasing. We are in touch with the miners all over the West Australian field. An agent has been appointed in Adelaide who knows the northern territory of South Australia well, and who was in charge of one of the Government expeditions through that country some few years ago. I think I may safely say that any news as to fresh discoveries in West Australia will probably reach your representative out there as early if not earlier than most people. I do not know that I have much to add. We have not made many purchases; we have not taken up the first thing that presented itself to us, but took eight or nine weeks to come to a decision. All the districts were carefully examined. The geological features and peculiarities of the various districts were gone into, because you know they are changeable. Some people think West Australia has gold from one end to the other, but nothing of the sort is the case. There are series of auriferous belts from place to place, and no one knows the extent of them, but of course there are districts where you can no more expect to find gold than you can to find radishes growing. With regard to Mr. Hall, in the future, as in the past, I think you will find he will not secure anything about which there is any doubt whatever. There are wonderful properties out there, and still more wonderful properties to be developed, and I think you will never have cause to regret that your company has embarked on a West Australian enterprise. (Applause.)

Mr. JOHN BARRY moved a vote of thanks to Mr. Pritchard-Morgan for his able and exhaustive statement. The impression that that statement had produced on his mind was the extraordinary care and discrimination displayed by Mr. Pritchard-Morgan and his colleagues in their examination of the gold fields of Western Australia. He thought their two companies might congratulate themselves on having secured men of such experience to act for them. He was glad to hear from Mr. Pritchard-Morgan that he had such a high opinion of the North Star property, which he had secured on behalf of the syndicate. Something like 3 ounces to the ton was not a bad result, and they had his opinion, which was fortified by information to hand, that as they went deeper the value of the ground increased, and there was a fair prospect of getting 5 ounces to the ton lower down. If that were the case, they would have a very valuable property indeed. He also believed there was information to hand that, in Mr. Hall's opinion, the working expenses would not exceed ½ ounce to the ton.

Mr. PRITCHARD-MORGAN said there were mines in the district paying dividends on ½ ounce to the ton.

Mr. BARRY remarked, in regard to the larger concession which Mr. Morgan had obtained in South Australia, of course it was very difficult indeed, with the information they had at present, to form anything like a definite opinion, but he believed there was evidence from experienced miners and metallurgists in South Australia that at least two of the blocks are auriferous.

Mr. PRITCHARD-MORGAN said all of them were auriferous, and two of them were proved to be payably so.

The motion, having been seconded, was unanimously carried.

Mr. PRITCHARD-MORGAN, in acknowledging, said that what he had done in Australia was to act as if he had gone out solely in the interests of the shareholders. With regard to the North Star, a cablegram of January 10 stated that the ore which was being broken out was 4 ounces to the ton, and the estimated value of the ore on the surface at that date was £3000, so that they had not a mere grass mine. He might further state that, in one of his reports, Mr. Hall said:—"There are few Westralian mines that have been placed on the English market which are opened up more than this, and which have one tithe of the prospect before it." He (Mr. Pritchard-Morgan) considered they had a very valuable property in the North Star, and he congratulated the shareholders in securing 65 acres, which gave them a very large and valuable property.

On the motion of Mr. J. H. BRADLEY, seconded by Mr. LETTS, a hearty vote of thanks was unanimously accorded the Chairman.

GREAT BOULDER PROPRIETARY GOLD MINES, LIMITED.

The second ordinary general meeting of this company was held at Winchester House, on Wednesday, Mr. ALEXANDER R. ROBERTSON (Chairman) presiding.

The SECRETARY (Mr. Bradley Depledge) having read the notice convening the meeting,

The CHAIRMAN said: Before proceeding to business I wish to say a few words with regard to the tragic event which has cast a gloom over the City—I refer to the death of Colonel North. He was one of my oldest and most esteemed personal friends. I have known him for over 20 years. A kinder, more charitable, more open-hearted man never lived. (Hear, hear.) He will indeed be missed in more quarters than one. Mr. Gamble North, one of your directors, has asked me to apologise for not being able to be here, and when I saw him this morning he was quite unable to attend to any business. I myself ask you for your kind indulgence, as the suddenness of the blow has come in a manner which has upset me. Colonel North was an intimate friend of every member of this board. In moving the adoption of the report the Chairman said: I see with great pleasure so large and influential an attendance to-day, as it testifies to the interest taken in the property. It is, further, in marked contrast to the last meeting of the company held in May of last year; on that occasion there were only about 30 persons present. At that time, too, we only had 280 shareholders altogether, whereas to-day we have close upon 1000 shareholders on the London register of the company. At the last meeting the shares in the company were selling at 23s.; to-day they are soaring in the neighbourhood of £10. The last general meeting was called for the purpose of closing accounts to December 31 for the greater convenience in the future as it would enable us to carry on the financial year for the 12 months between January 1 and December 31. At the time of the last meeting we had only just commenced crushing, and in the accounts we had no report whatever to give. I am pleased, however, now to be able to tell a very different tale. During the period covered by the report we have won from the mine £111,823, plus some £12,000 worth of tailings. All this has been accomplished in the face of every possible kind of difficulty. You have all received a copy of the report and accounts, and no doubt you have all studied it with the attention that it deserves. I think you will agree with me that what is set out in that report is very complete, still there are one or two matters that I should like to refer to that are not contained in the report. Mr. Lane, who I am pleased to say is with us to-day, is our superintending engineer, and of the duties entrusted to him one was that of selecting a manager. This was no light matter for Mr. Lane to undertake, he having at the time many other engagements, and for acting as he did he deserves the heartiest thanks of the shareholders. Your board has already passed a vote of thanks to him, together with a cheque for his services which have been of an exceptional nature, and have resulted in our being able to present you such a splendid balance-sheet, and pay you such handsome dividends. Surrounded by every kind of obstacle as is inevitable in a new and resourceless country, want of transport for machinery, scarcity of labour, and, above all, scarcity of water, Mr. Lane surmounted them all, and since his first modest crushing on April 16 last year he has regularly sent us fortnightly returns amounting, in all, to close on 46,000 ounces of gold. Before leaving this part of my remarks I wish to add that Mr. Lane's patience was eventually crowned with complete success, and that Mr. Richard Hamilton, the gentleman whose name he had mentioned to the board before leaving for Australia, was induced to give up his position in Arizona and undertake the management of your property. It is the intention of the board, and I feel sure the step will have your full approval, to continue Mr. Lane's services as superintending engineer on his return to Australia, which he expects will be in the course of a few months. The next matter I wish to touch upon, and on which the board have several times been approached by shareholders and others, is that of selling off a portion or portions of our property, and forming subsidiary companies for the working thereof. We have given this matter our most careful attention, and some four or five months ago wrote Mr. Lane to carefully study the question of the subdivision of the property, with a view to the formation of at least two new companies, and I may say that we have practically decided on the division we are going to make, and hope that at no distant date you will have all the details and full information as to how we propose dealing with the new companies. The next point I want to touch on is that of the 15,000 shares which we have unissued. To fully explain the position, I must trouble you to go back with me to the period when this company was formed in June, 1894. Having had much experience as to the vital importance in mining ventures, and especially so in a new field, of having ample working capital, your directors required that before going to allotment they should be guaranteed a working capital of at least £40,000. Times, however, were then not what they are now, and considerable difficulty was encountered in getting this sum together, so much so that we eventually agreed to be satisfied with £30,000 for working capital, stipulating at the same time that 15,000 shares should be held in reserve, unissued. I am glad to be able to say that these 15,000 to-day are intact and at the disposal of the shareholders. We have had many offers for these shares, but, having as we have, the fullest confidence in the enormous future which awaits us, we have refused all, and our intention is to utilise these shares only in the development and possible extension of our property, realising them in small lots as and when opportunity occurs. I may here mention that having now a good supply of water, we have purchased within the last few days a further 10 stamps, and have sent instructions to Mr. Hamilton to have them erected as soon as possible. The Chairman concluded by reading the following report and cable from the manager:—"As you have already been informed by cable, we struck the lode from the 200 feet level, and find that it is apparently as big and strong as ever. We have not squared up the work yet but the reef, so far as we have worked, shows 5 feet thick, and will probably be much more." The following cable has been received this morning:—"Driving north and south 200 feet level the width of the lode is 13 feet; average standard. Mine promises exceedingly well for the future." The letter goes on to say;—"When we get squared, so that I can take a proper sample of the whole of the reef, I will let you know its value; but there is no doubt of its being highly payable, and I see no evidence whatever of its being inclined to diminish. We have, partly from the fact of striking the reef, got more water in the main shaft, and also from the extension of our eastern crosscut through slate country, cutting various little sources of water. These two strikes occurring simultaneously with the finding of the reef at the 200 feet level by the Lake View Company, will, I feel sure, give shareholders still greater confidence in the value of the Boulder property. It is not often that such a combination of evidence occurs within a period of two days. The character of our reef at 200 feet is similar to what it is at 140 feet—that is, that the schist still continues to go down with the quartz, and that the iron in the lode is still in an oxidised condition, so that we may reasonably hope to have it oxidised for a considerable depth still the country to the east of the reef being soft and fairly porous."

Now I will ask Mr. Lane to address you, after which Mr. Taylor has kindly offered to make some remarks. I need not say that, at a later stage, should any shareholder wish for any further information, I will only be too pleased to give it if within my power. I now beg to move the adoption of the report and accounts.

Mr. G. P. DOOLETTE seconded the motion.

Mr. ZEBINA LANE, who was warmly received, said: It is very flattering, indeed, to come back, after being away for 20 months, and to hear the remarks that have just been made by the Chairman, and to see the way in which you have received them. It certainly brings back to my mind the time when I was here before—two years ago—when the original prospectus was first brought out. That prospectus was not at all well received, simply because gold mining in West Australia at that time was only in its infancy, and none of you who were here then, unless West Australians, would believe it. The report I made on the prospectus at that time clearly set out that the value of the Boulder lode was equal to 5 ounces to the ton. I think I have returned to you and proved that that statement is amply verified. (Loud applause.) The mine started with great opposition, and after I left you I heard serious opposition was brought to bear, to see if they could not prove that the mine was actually valueless. A great many statements were made in a section of the Press at that time to that effect. Still, I had certain difficulties to contend with. I was longer in bringing about a crushing than I thought I would have been. Many of you who do not know the difficulties to contend with in We tern Australia can scarcely know what they are—difficulties of carriage, of water, of labour, and all the rest of it. Nearly all of these were swept away by the advent of the railway. That railway is now within a few miles of Hannan's, and arrangements have been made so that it will be connected with the Great Boulder Mine. Then we shall have no further difficulty whatever with reference to carriage or supplies. We started crushing, as the Chairman has already told you, on April 10. The results he has put before you; therefore, I need not refer to them. The costs for last year have been very great, owing to the difficulties I have enumerated to you, but if the costs have been high, I may safely tell you that during the current year we will cut them down at least 33 per cent., if not more. The water supply, which has been a very great bugbear, has been in a sense tided over by the scheme which I suggested being carried out. Now we are pumping water from a lake 4 miles away with an elevation of 171 feet. The pipes are very small, and will in the near future have to be replaced as we extend operations; but that you are in a position to do without noticing the cost, and it will not be very much. That little scheme thus laid down has paid for itself over and over again; indeed, we could not have gone on without it. It was utterly impossible to cart water 4 miles in a country like that to crush our ore with, and it would cost much more to cart the ore to the water. The Chairman has already told you that we have 20 stamps which are running, and 10 more, which are in course of erection, will be running in the course of a few days if everything goes well, and 10 more are already ordered. We have also on the ground one of the most complete milling plants which there are in Western Australia to-day. We, likewise, have all the necessary tools and everything to do our own repairs. We have also drilling machines, boring machines, and so on; so that in the event of any breakdown we can repair it almost immediately on the spot. A great deal has been said, and a lot of letters have been written to the board, with reference to dry crushing; so, perhaps, I had better explain the position I have taken up in the matter, and which has the support of the board. The system that we are now using is the old gravity stamps—an old, worn out, and a well proved system—but it is doing very good work to-day. The dry crushing process is only in its experimental stage, and I have always considered that a country where everything is so costly is not the place in which to go on experimenting. Let the others experiment, and I am quite ready, when they have demonstrated to me, as representing the Great Boulder Company, that they can treat our stuff for the same money, and give us better results, to adopt their system. The future policy of the workings will be one of direct consultation with Mr. Hamilton when I go back to the property; but I think we will, as I have already recommended to the board, sink at least three shafts on the property, and continue those as main shafts down to 500 feet or 600 feet more, especially to see what water there is in the country, as well as to develop the lode. The reference that the Chairman has made to-day to the opening out of the lode on the 200 feet level is very gratifying indeed. I have been rather concerned about that for the last four or five weeks. We had sunk a winze as far as we dare go down owing to the water, and then we had to start to drive back under that winze. Now Mr. Hamilton has advised us that he has driven back under that winze, and that the lode is 13 feet thick. I may tell you that, as far as I had sunk that winze to a depth of 28 feet to 38 feet, the sample obtained was marvellous, as it went over 20 ounces to the ton. (Applause.) The development and measurements in the lower levels with the sections that we have cut out give you £1,000,000 of payable ore in sight. (Applause.) Since I have been here I have heard one or two complaints made, that visitors have not been allowed down the mine. I can assure you—and there are West Australians in this room who will bear out my statement—that no one has ever been refused permission to visit the mine. I made it a rule in mines I have managed that where there was a local hospital, which had to be supported by us, we should charge visitors 5s. to go down the mine. This charge has been made since we have been the show mine of Western Australia. I may tell you that one gentleman refused to pay that 5s. and the officers did not allow him to go down. Probably that gentleman may be cause of the complaint. (A Voice: "You have got him.") I think from what you have heard to-day, and from the plans, reports, and specimens we have sent, all the information possible for me to give to the board has been given to you. Nothing has happened that we are ashamed of, and any expert, or anyone who goes to Western Australia, can go down the mine and see for himself. The Chairman was good enough to refer to Mr. Hamilton. Mr. Hamilton has been a friend of mine for 25 years. We were practically educated together as mining engineers, and have worked together, although we have been separated for the last 15 years. I think you will find in Mr. Hamilton one of the most capable and intelligent managers you could find in Australian mines. He is one who knows his business thoroughly, and who is well up in milling, amalgamating, and everything appertaining to what is required in a mining engineer to manage such an important property as the Great Boulder. I had no hesitation in recommending him; but it took me some time before I could get his services, and I am very pleased to hear the Chairman say that, outside what I stated, the board has reports which bear out my statements concerning him. (Applause.) I do not think I need detain you very much longer; you have had everything put so clearly before you. All I would like to add is to refer to the support I have received from the directors, and the latitude they have allowed me. They have never interfered with me as far as the mining was concerned, and that, I think, goes a long way to prove that boards should be constituted of men of such financial ability that they can manage the finances of the company, and that as long as they have a man at the mine they should trust to his mining knowledge to bring operations to a successful issue. (Applause.) I have been supported by the board in London under the great difficulties we have had to contend with. I have worked under several boards, but never under one to whom you could so safely trust matters. The directors are preparing the subdivision of the property, and that matter will be put before you, I suppose, at an early date. I think that, leaving these matters in the hands of such a board, to handle the finances as it has done in the past, and with what we can do on the other side, we will make the Great Boulder one of the biggest mines in Western Australia, if not one of the greatest mines in Australia itself. (Cheers.) I thank you for the way in which you have received me, and I trust, if we live long enough, the board will be kind enough to send out for me at the next annual meeting, and I shall be delighted to come back, and that we shall return double the dividend you have received in the past year. (Loud cheers.)

Mr. EDGAR TAYLOR: Speaking on behalf of my firm, I wish to say that it is a great satisfaction to us to be connected, as consulting engineers to the board, with a company which apparently has before it so prosperous a future. The great strength of the vein, and the fact that its continuity has already been proved in the 100 feet level for a distance of over 800 feet in length, strongly indicates a reef of permanent character. That it is phenomenally rich in gold has been demonstrated by the extraction of the large total of 36,283 ounces from 6871 tons. A most encouraging feature is the recent striking of the rich ore in the 200 feet level—the deepest level in the mine—and we look upon your prospects as exceedingly bright. Our services, in the capacity to which we have been appointed, will always be most readily at your disposal, and we feel that in any advice we may be called upon to give to your directors, our decision will be greatly strengthened after the inspection of your property by our representative, Mr. Joseph Garland. That gentleman is now at your mine, and the information he will bring to us on his return will enable us most clearly to understand the position of affairs, particularly having in view the increasing scale of operations at surface and the continued successful opening up of the mine in the underground workings. (Applause.)

Major JOSEPH expressed great satisfaction with the management, and with the plain and unvarnished account Mr. Lane had given of the property. (Applause.)

The motion, on being put to the meeting, was carried unanimously.

The CHAIRMAN next moved:—"That the final dividend of 2s. per share, making 40 per cent for the year, recommended by the directors, be and is now confirmed, payable on the 7th inst."

Mr. JOHN WADDINGTON seconded the motion, which was also agreed to.

On the motion of Mr. DOOLETTE, the retiring directors (Messrs. A. R. Robertson and John Waddington) were re-elected.

The auditors (Messrs. Price, Waterhouse, and Co.) were also re-appointed.

Cordial votes of thanks were then passed to the Chairman and directors and to Mr. Lane, and the meeting separated.

MELVILLE WATER PARK ESTATE, LIMITED.

The first ordinary general (statutory) meeting was held on Wednesday, at Broad-street House, New Broad-street, E.C., Mr. C. ALGERNON MOREING presiding.

The SECRETARY (Mr. A. S. Rowe) read the notice convening the meeting.

The CHAIRMAN said: The present meeting is held, in compliance with the statute, at the completion of the first four months of the company's existence. In so short a time the directors naturally have not a great deal of information to lay before you. This company was formed at the beginning of the present year for the purpose of acquiring four blocks of land, holding a commanding position on the Swan River, facing the city of Perth, the metropolis of Western Australia, and having several miles of river frontage. Of the capital offered in London nearly the whole was privately subscribed by the directors of the present company, the leading West Australian exploration and trust companies, and their friends. The total area of the property, which is named the Melville Water Park Estate, is 4548 acres. The estate was purchased by the present company for the sum of £50,000 in cash. The average price, therefore, is almost exactly £11 per acre. The directors and their advisers in the colony believe that the property was secured at an exceptionally favourable price, in proof of which may be cited the fact that the West Australian Government purchased two adjoining locations (Nos. 88 and 68), which you will see by the map placed before you are situate to the west of the company's property, and, consequently, are farther distant from the city of Perth, for the price of £6000, or at the rate of £30 per acre—nearly three times the price per acre paid for our estate. The intention of the Government is to lay out these two blocks as a public park. Considerable benefit is likely to accrue to our company's property from this fact, inasmuch as we propose leasing some ground on our Block No. 73, adjoining the intended park, for the construction of an hotel, and practically the whole of Block 73 will be utilised for residential and building purposes, the value of which is likely to be increased by its proximity to the public park. Our local advisers, who are exceptionally well informed on the subject, have declared to us that there is not at the present moment any land, in small lots suitable for building purposes, available on the river between Perth and Fremantle at less than £250 an acre, and very little indeed is to be had at even that figure. I may tell you that our land is described as sloping gently upward from the river, and that from it magnificent views of the Swan River and of the city of Perth, as well as of the surrounding country, are enjoyed. An article on the estate, which appeared in the *Perth Mining Journal* of February 22 last, and of which a reprint was sent to the shareholders, gave a description of the future suburb in glowing terms, which I will not attempt to emulate. You will have been able to gather from it that our estate is well wooded, and that in many parts of it beautiful swards of grass land, teeming with wild flowers, add to its striking natural advantages, and render the western blocks the most desirable residential area near to Perth city. Of the eastern blocks we propose to make somewhat different use. Our river frontage on Block 61 offers commercial facilities too great to be passed over. The construction of a jetty would render it possible to establish there local industries of various kinds, around which a commercial town would spring up, easy of access by water, and in close contiguity both to Perth and Fremantle — advantages not to be found combined in any other spot. We are having our land surveyed, are commencing the erection of a pier immediately, and will probably construct a second one also. We are shipping a steamer out at once to establish river communication on our own account, and shall probably send out other well equipped boats for the same purposes. There are, however, two local steamboat companies who will, we are informed, be glad to arrange for their boats to call at our piers, as a part of their regular services. As to internal communication, you will notice on the map that a road is constructed which, after leaving Fremantle, crosses right through our estate and passes over the Lower Canning Bridge on its way to South Perth. Much more important than this, however, is a project which the inhabitants of both Perth and Fremantle have been endeavouring to induce the Government to carry out for some time past. This is the construction of a railway from Freemantle to South Perth, which would, by the most advantageous route, pass right through our estate and practically bisect it. Now that these locations have passed into the hands of this powerful company, instead of being split up amongst various holders, and since the development of the whole of the property is being so energetically taken in hand, a great stimulus has been given to the agitation for the proposed railway. The Press in Perth and Fremantle has quickly reflected public opinion, and in all quarters there is an earnest expectation that the desired railway may shortly be sanctioned. Your directors and their representatives would naturally think it their duty to afford every possible facility towards the prompt fulfilment of this project. That increased railway facilities between Perth and Fremantle are an absolute necessity, sooner or later, may be taken for granted. The enormous expansion of Perth, and the great increase of population there, will, in a very short time, render some such developments absolutely necessary, not to speak of the ocean traffic to Fremantle, increasing already beyond all previous calculations, and likely to cause still more serious embarrassment to the railway authorities in the near future, as the gold fields in the interior are opened up. The congestion upon the existing Fremantle-Perth line is only too notorious, and is not very likely to be decreased now that the opening of the section to Coolgardie is attracting a larger and larger traffic in mining and milling machinery. A through line from Fremantle on the south side is the natural remedy. There should be no necessity for the lines and stations between Fremantle and Perth to be blocked by the gold fields traffic. The whole of the latter could be despatched by another line altogether, so as to prevent its passing through the congested portions of the city of Perth at all. Such a line is the one indicated, and it is certainly not surprising that the project should be received with enthusiasm by those on the spot, who are best able to appreciate the necessity for it. Meanwhile the Government is doing excellent work in having the Swan River surveyed by Commander Dawson, the results of which appear to have shown that the dredging of the channel necessary to permit deep sea vessels coming up the river would not be an operation of great magnitude, but, on the contrary, could be carried out with comparative ease. To sum up my remarks as to our intentions with regard to the development of this fine property, I may state that we propose to allocate one portion to residential purposes, another portion to commercial and manufacturing purposes, with the necessary pier and wharfage facilities, and setting aside plots for workmen's dwellings such as will be required sooner or later, while a third portion will be utilised for agricultural, or, at least, horticultural purposes, for which its fertility appears to render it most suitable. From these explanations it will readily be seen that almost unlimited possibilities lie before us in exploiting our property. Further, the company commenced with the immense advantage of buying at a low price, having paid the various vendors what we are accustomed to call the "bed-rock figure" without any profit to intermediaries. Ample capital was subscribed for all present purposes, without any underwriting or promotion expenses being incurred. Under these circumstances, your directors are able to look forward to an exceptionally prosperous career for the company. We believe it represents an investment as sound as any in the colony, with the promise of ample profits at no distant date. Our property increases in value automatically with the growth of the colony, and with the inevitable expansion of Perth and Fremantle, due to the great development of the gold mining industry and the immense increase of trade and population in those two cities resulting therefrom. In conclusion, I am bound to express the great obligation which the shareholders are under to the legal representative of the company in the colony, Mr. Alexander Perceval Matheson. Mr. Matheson is a shareholder in the company, and has its interests very much at heart. His high position in the colony, and the esteem in which he is held in all circles there are of great advantage to us. His energies are very largely devoted to the company's operations, and it is to them that we shall in great measure owe the success that we confidently anticipate. This being only the statutory meeting no motion has to be put before you, nor are there any accounts to be submitted but I shall be happy to answer any questions the shareholders may wish to put.

The CHAIRMAN, replying to Mr. W. F. TURNER, who enquired as to the market price of the shares, said the shareholders had an idea that the shares were worth £5, and he did not suppose that any of them would part with their holdings under that figure. The outside public were not quite sufficiently educated in the knowledge of the possibilities of the company—the situation of the land and the immense extent of it—to be prepared to pay that price, and the consequence was there was a dead-lock as to dealings. There were no buyers at the minimum price at which holders were prepared to sell, and he did not think that if offers were made even at £5 the shares would be forthcoming.

The proceedings then terminated.

HERBERT GOLD, LIMITED.

The statutory meeting of the shareholders of the Herbert Gold (Limited) was held on Tuesday, at the offices, 39, Lombard-street, Dr. CHURCHWARD (Chairman of the company) presiding.

The SECRETARY (Mr. John Smith) read the notice calling the meeting.

The CHAIRMAN said: Gentlemen—This meeting is bound to be held, to comply with the law, and the directors gladly avail themselves of the opportunity to report progress made. As you are aware, this company was formed to purchase from the Albert Mines Syndicate Block 1204, called the Old Chum, situated 3½ miles north of Coolgardie, upon exceedingly favourable reports. The purchase has been completed and managing director and consulting engineer appointed, and we have been fortunate in securing for these posts the services of two of the most reliable men in West Australia. The property has been duly transferred and registered in West Australia as a company. Acting on the advice of our managing director and consulting engineer, we commenced to sink the main shaft, and this is being now pushed on as rapidly as possible, and on April 17 we received cabled as follows: "Main shaft is now down 60 feet; a new shaft in the north end of the line of reef has been sunk. The ore is 5 feet thick, and we have now at dumps 70 tons of first-class ore, showing gold freely." We also received the following cable: "Struck leader on the hanging-wall side of the vein; assay value, 8 ounces per ton." On April 25 the following was received: "Trial crushings next week; reef 6 feet thick; ore still richer." As soon as we have sunk the main shaft deep enough to obtain a sufficient supply of water we shall order the necessary machinery, and we shall be in a position, after testing the quantity and quality of water, to know what is the best plant to have erected to treat the ore. This may entail a little delay, but we feel that we shall be thus serving your interests best. As regards the water question, I do not think we need feel uneasy, as a neighbouring mine two blocks away has plenty of water at 120 feet, and our consulting engineer states his belief that we shall have all we require at 150 feet. On the table you will see some samples which have been sent from the mine. Mr. Braskspeare, in a letter, says these samples were taken from the dump, and there are plenty more of the same kind. All I can say is that if they are a quarter as rich as these show we have a real bonanza. We are assured by our managing director and consulting engineer and other experts who have visited this property that it is certainly one of the best in Western Australia. Now that the railway is opened, it will lessen the cost of transport, and, being so near the railway, will give us a great advantage over those at Hannan's and 90-Mile. Gentlemen, everything so far is exceedingly satisfactory, and we hope to be in a position to pay dividends before the end of the year. (Applause.)

The CHAIRMAN, in reply to questions, said that the board expected the results of the crushings very shortly, and as soon as these were received the shareholders would be advised as to the results. The crushings took place last week, but no doubt some little time was required to take off the tailings and have all the assays properly done. Any telegrams received would be published in the financial papers as soon as the directors had them.

A SHAREHOLDER asked if there was much stuff ready for crushing.

The CHAIRMAN replied that on April 17 there were 70 tons of ore at grass, and this could be crushed at a neighbouring battery. Some companies had sent out machinery and plant, costing thousands of pounds, and when it arrived it was found to be practically useless, so that the directors did not want to fall into that fault.

Mr. SMITH proposed a vote of thanks to the Chairman, who had given the meeting a very full explanation of the condition of the property. (Applause.)

Mr. FISHER seconded the resolution, which was carried with acclamation.

The CHAIRMAN, in replying, said that when they next met they would have a map of the district, showing the property. The maps had been very constantly changing, and numbers and names of blocks had been repeatedly formed, wiped out, and reformed again, so that a map in, perhaps, two months' time, was not really a correct one. At the same time, before the next general meeting, they would have a map of the district.

The proceedings then terminated.

WHEAL BASSET, LIMITED.

The first ordinary general or statutory meeting of this company was held on Tuesday, in the Account-house, Mr. FRANCIS OATS presiding.

DIRECTORS' REPORT.

The directors in their report stated that since the two properties were taken over Wheal Basset had been carried on in much the same way as under the old company, with the exception that some additions had been made to the machinery and plant and extra development work had been carried out underground. The pumping engine at Marriott's shaft having been borned down, the water in South Frances part of the property had risen to about the 170, where the manager hoped, by the larger plunger poles he had put in Pascoe's shaft, to keep the water from rising further until some steps were taken to re-erect or replace Marriott's engine. West Frances had, however, allowed the water to rise in the bottom of the mine, and until the manager had seen what effect this would have, they could not say how far Pascoe's engine would be sufficient for keeping the water. The manager had recommended that Marriott's shaft be cut down and made perpendicular to work and develop the properties. The pumping engine, pitwork, and machinery that might be required for the shaft were now under the careful consideration of Captain James and the board, but no decision had yet been come to. The directors were now considering the development of the mines more quickly by rock drill machinery, and endeavouring to arrange a reasonable contract to that end. During the short time the company had been at work it was difficult to make many alterations with a view to improving the machinery or make any discoveries underground. The board was, however, satisfied that the steps so far taken were right, especially in endeavouring to clear adits in the South Frances Mine, and in the extra development work that had been undertaken in Wheal Basset, and were sanguine that the different points they were now driving would lead to discoveries not less rich and important than had previously been made in the properties.

Captain JAMES also submitted a detailed report.

The CHAIRMAN moved, and Mr. G. CARTER seconded, the adoption of the two reports.

The motion was unanimously carried.

The following gentlemen were re-elected directors on the motion of Mr. JAMES WICKETT, seconded by Captain JAMES BRAY:—Messrs. F. Oats (Chairman), T. B. Bolitho, M.P., T. R. Bolitho, J. G. Rose, G. Carter, J. C. Daubuz, A. Lanyon, P. B. Henwood, J. Mayne, H. Olde, H. Trembath, and M. H. Williams.

Mr. H. PAIGE stated, in reply to a question, that under the Articles of Association one-third of the directors would retire annually.

The CHAIRMAN stated they had not received any great response to the offer of shares from those in Cornwall who previously expressed anxiety to be connected with the mines. But they hoped those who had contributed to carry on that concern would be rewarded. They must try to raise tin without loss, and at the least possible cost. That could be done in two directions, but each would mean the expenditure of money. They could reduce the cost of working by using Marriott's shaft and concentrating their pumping and hauling there; and by putting in new tramways and things of that sort, to carry the stuff to the stamps, they could save cost per ton. By dealing with more stuff and increasing their output they could proportionately lessen the costs. About a quarter part of the expense of those two mines had been incurred in pumping water. If during that time the mines had sent out double the quantity of tin it would have been one-eighth instead of a quarter, and thus been reduced from 4s. to 2s. per ton of produce. As to the water in the western side, they were more or less in a state of uncertainty as to whether Pascoe's engine would be able to keep the water at the 180 until they got a new engine up. The leases of the concern were now in a fair way of being agreed to and executed, and they knew of nothing between the company and the lords that had to be settled.

Mr. E. S. MARTYN suggested that the manager should publish monthly reports and circularise shareholders in case there were any important discoveries. The manager was asked to do this.

Captain JAMES, after stating that the adits were being gradually cleared, said he would have nothing to do with South Frances with the old shafts, which meant each engine costing £1000 a year more than it ought to. There should be new shafts, or the old ones straightened, and the straightening down of Marriott's was both the easiest and cheapest. It was impossible to put South Frances stuff to work as had been anticipated. The men must shift for and help themselves.

The meeting then closed in the customary manner.

EAST POOL.

A three months' meeting of East Pool adventurers took place on the mine on Monday, Mr. J. R. BRANWELL presiding.

The accounts showed labour costs, £4681; merchants' bills, £1653; Illogan rates, £14; Tehidy rents, £43; Stannary assessment, £6; total, £6400. 170 tons 10 cwts. of tin ore had been sold at an average price of £27 14s. 1d., producing £4724; arsenic realised £1692; discounts, £34; carriage, £21; and sundries brought in the total receipts to £6483 12s. 9d., leaving a profit of £83 9s. 9d.

The following report of the agents was presented:—

The underground operations are mostly above the 140 fathom level.—South lodes. We have one stope at the 140 fathom level west of engine, worth £18 per fathom. The rise in the 140 fathom level is communicated with the 130 fathom level. The 130 fathom level east is being driven by a boring machine, and is worth £8 per fathom. We are putting up a rise in the 130 fathom level by a boring machine, which at present is worth £8 per fathom. This, we think, will soon improve. We have a boring machine driving the 80 fathom level east of the south shaft worth £9 per fathom. We have one stope at this level worth £12 per fathom. We are rising in the back of the 60 fathom level by a boring machine worth £13 per fathom. We have two stopes in the back of the 70 fathom level worth £12 per fathom each stope.—Tribute. We have 13 pitches working by 38 men; average tribute 13s. in the £.

Supplementing his report, Captain BISHOP said that necessity had driven them to explore in the old workings, which had been idle for more than 40 years. He was pleased to say that although they were not rich, yet their value had excelled his expectations, and they had produced more arsenic than he imagined could have been possible. They had no alternative. They had either to explore these old workings or discharge men, which they were very reluctant to do. (Hear, hear.) He was glad to say that up to the present they had not discharged a single man. (Hear, hear.) The present operations were only makeshift, and he hoped the time was not far distant when they would be able to get out the water and resume legitimate mining in the bottom levels. (Hear, hear.)

The CHAIRMAN gave details of the steps taken, which had resulted in a proposal accepted by both Wheal Agar and East Pool Committees to refer the matter to arbitration, East Pool to possess Wheal Agar sett on the terms arrived at by the arbitrators. He hoped that no long time would elapse before East Pool, Wheal Agar, and South Crofty engines would restart. They were all aware that Mr. Strauss, the respected member for the division, some time ago observed that while the negotiations were going on he would start the Wheal Agar engine himself. Mr. Strauss wrote to him on April 23 saying he was still ready to work the engine providing there was an assurance that there would be no undue delay on the part of the arbitrators. On Saturday last he (the chairman) wrote saying he was now able to answer his letter satisfactorily, and that at a meeting held on the previous day Mr. Grylls, acting on behalf of Wheal Agar, had agreed to accept the offer made, and there would be no unnecessary delay in referring the matter to arbitration. Mr. Strauss would get that letter when he arrived in the City this morning; and while they were carrying on the negotiations and arbitration he hoped Mr. Strauss would be able to get the engine to work. As soon as the Wheal Agar pump got to work East Pool would do the same, and he hoped they would be able to persuade the committee of South Crofty to follow suit. The water question was not one that affected one mine, but it concerned all mines. It was quite impossible to throw the pumping of the whole district on one mine, but if all the mines joined in the pumping they would soon get the water under and the men employed again. He hoped by that time Mr. Bain and Mr Strauss would be able to tell the better price of tin had also arrived. They had a much better price for arsenic, and this had helped them amazingly, and now they only wanted a better price for tin. He hoped what he had said would be cheering to those gentlemen behind him (the miners' deputation). They would say with Mr. Hattersley, "we want a little breathing time"; they could do with it as well as any other mine; they would gladly stop operations and wait until better times came. But if they did so what were the poor men to do. Wheal Agar men had been all discharged; East Pool men have been kept employed. If they had acted on the selfish policy and discharged the men, what would have become of them? It was because they wished to see every mine at work that they were striving their utmost on the present occasion, and even at the risk of heavy loss, to keep the mines working. There were businesses which experienced adverse periods besides mining; there were some businesses which had been under a cloud for two or three years, but they did not throw up the sponge; they went on hoping for better times. He wanted them to be of good cheer, and try and use their influence with the neighbouring mines to impress upon them the necessity of doing the water pumping together. It was not a question of one mine, but of the whole of the mines. (Applause.) The conditions of purchase would be that Lord Robartes' consent should be given, that all liabilities should be discharged by Wheal Agar, and East Pool purchase at the price arrived at by the arbitrators. Lord Robartes was in a position to withhold his consent or to give it, but he (the Chairman) believed his lordship was animated by a desire to do his best for the community at large, and no difficulty need be apprehended. Therefore, he hoped ere long they would see the end of the water difficulty.

Mr. HENRY ROGERS remarked that his friend Mr. Branwell had, with his usual lucidity, very fairly represented the position of affairs. On the letter which had been written to Messrs. Paige and Grylls he would like to make an observation. Under the existing sett of Wheal Agar—which would expire in September—Lord Robartes had the right to purchase the machinery and materials at the expiration of that sett at a valuation. Therefore Wheal Agar adventurers could not give to East Pool the title to the property without Lord Robartes consent. That was why the words "subject to Lord Robartes consent" had been introduced into the letter. When the letter was handed to Messrs. Paige and Grylls, they made no objection to it, and he (Mr. Rodgers) believed things were satisfactory, and that in a day or two they might expect the draft agreement. There was one other point he wished to speak upon. Before they actually signed a memorandum of purchase, it was necessary that they should negotiate with Lord Robartes. He (Mr. Rogers) was asked to interview Mr. Pearse Jenkin on the subject, and did so on Friday. He was bound to say that Mr. Jenkin met him very fairly, and although he (Mr. Jenkin) could not pledge himself on any particular point, he suggested they should send away, for Lord Robartes' consideration, any points with regard to the sett they wished discussed. That was as far as they could expect Mr. Jenkin to go. Those points had been drawn up and would be submitted to Lord Robartes in the middle of the week. They could not be disclosed at the present meeting, as it was only right they should be sent to Lord Robartes first. (Hear, hear.) He had now to propose, the position of affairs having been explained: "That the committee of this mine be authorised, upon such terms and in such manner, by arbitration or otherwise, as they think advisable, to purchase Wheal Agar Mine and plant, and to accept a new lease of the Wheal Agar sett from Lord Robartes." He desired to appeal strongly and emphatically to the sense of honour, which he was sure influenced Mr. Bain and the other members of the Wheal Agar Committee. He and Mr. Bramwell were the largest shareholders in East Pool, and having regard to the fact that they had spent a considerable amount of money on the mine it was only fair that every gentleman in the neighbourhood should take upon himself a fair and reasonable proportion of the liability. It would be a fair and equitable thing for Wheal Agar, South Crofty, and East Pool engines to start working at the same time, and thus conjointly and separately remove the disaster which prevailed in the locality.

Mr. D. W. BAIN said he had been appealed to to second the proposition, and he did so without hesitation and a good deal of satisfaction. It would be wise to bury the past as far as they possibly could. (Applause.) The excellent Chairman had made reference to what he had said on a former occasion as to blame attaching to both sides, and while he had no desire to re-open the matter, he did not know he would retire from the position he had taken up. As adventurers in the neighbourhood and interested in the success of mining, they must all be thankful that the solution of the difficulty had at last been found, and it would be with great thankfulness that they would see operations resumed both at Wheal Agar and East Pool, to the benefit of the miners of the locality. (Applause.)

Mr. HEARD, supporting, said this was comparatively speaking, a happy day in the history of these two mines. He rejoiced to know that the present arrangements had been made, and he hoped all past differences would be forgotten, and they would again see better days. (Hear, hear.)

Mr. BAIN said that he had reason to believe that they would have very liberal terms granted them by Lord Robartes. There was no who took a greater interest in the miners, and no one who desired more to do his duty to all than Lord Robartes. (Applause.)

The motion was then carried.

The CHAIRMAN said there were one or two gentlemen present of influence in South Crofty, and in the district generally, who had by their writings given the East Pool committee advice. All that was good in that advice they had endeavoured to carry out, but certain other things had appealed to them in a different light. Some of those gentlemen might favour what had been done with regard to the simultaneous working of the engines, and he would like to hear an expression of opinion.

Mr. WICKETT said he had no doubt the South Crofty committee would do what was right.

The CHAIRMAN urged them to do what they could in that direction in the interest of the miners and the neighbourhood generally.

Mr. H. P. VIVIAN said there was outside some talk of an amalgamation of South Crofty, North Tincroft, Wheal Agar, and East Pool. He would like to ask whether that had been considered?

The CHAIRMAN said no proposition to that effect had been made.

Mr. BAIN, in reply to the Chairman's request for an opinion, said he thought the fact that South Crofty had struggled on with the engine as long as it was possible was very strong evidence of the interest they felt in the mining district. (Hear, hear.) Neither himself nor Mr. Holman could pledge their colleagues on the South Crofty committee, but they could say that they would be pleased to do their best for the district. (Hear, hear.)

Mr. HOLMAN said they had lost £120,000 in South Crofty, and had only received about £5000 in dividends, and some of the shareholders had gone as far as they could. They would have to be consulted. (Hear, hear.) If tin went up and things generally were brighter, there was no question that the mine would be floated as a Limited Liability company, with a capital of £50,000, but in the present state of things he did not think it was wise to try it.

The CHAIRMAN said he was glad to get the expression of opinions. It was all very well to talk about benefiting the district; the only way to do that was to start all three of the engines. (Hear, hear.) It was the stoppage of the engine that they complained of in Wheal Agar. A good deal had been said about what had been lost in the mines. But had not anything been lost in East Pool? Captain Bishop could tell them the ancient history of East Pool, and what about those people who gave £30, £40, and £50 for each share? Let them multiply 6000 shares by £40, and compare it with the present value of East Pool; and then had anything been lost? This view was hardly ever spoken about. Had Mr. Rogers never lost anything by his shares, and what had he (Mr. Branwell) gained by his shares? They heard a lot of what had been gained in East Pool and Dolcoath, but they had been taking money out of his pockets and putting nothing in. But they were all going to do their best for the neighbourhood, whatever might happen.

Mr. JOHN MAYNE said the shareholders had sustained heavy losses, but what had the lords lost? He suggested that the lords should be asked to contribute to the expense of getting out the water, and he believed they would be pleased to do so.

Mr. LANYON seconded.

Mr. WICKETT said he believed last time the Wheal Agar engine was worked, part of the expense was guaranteed by Mr. Alfred Lanyon. He thought it was only fair that Mr. Lanyon should be recouped, and he proposed that East Pool should bear that part of expense guaranteed by Mr. Lanyon. (Hear, hear.)

Mr. JEFFERY seconded, and the motion was carried unanimously.

Mr. LANYON said he came to the meeting because he understood there was to be a demonstration of miners. His experience had been that when a large number of men were collected in that way a great many did not understand the merits of the case, and he was glad they had only sent a deputation. (Hear, hear.) He thought East Pool had done the proper thing, in fact the only thing that could be done, and he sincerely hoped they would realise Mr. Heard's wish—that happy days were in store. With regard to the guarantee he did feel at the time that immediate and decisive action on the part of the lords was necessary, and he, on the spur of the moment, offered to find half the money if Lord Robartes would find the other. He never for one moment supposed that any set of adventurers would have taken advantage of the offer he made, on the spur of the moment, and expect him to bear the expense. He might say there was a strong feeling on the part of some people that "Mr. Lanyon should not court popularity at the expense of their pockets." If they knew him at all they would know that he would not accept from any man a favour if that man felt he was touching his pocket, and trying to court popularity at his expense. He would not mention names, but let the matter rest there.

Mr. BAIN said he travelled about a good deal and never heard a single individual suggest what Mr. Lanyon had mentioned, and he hoped Mr. Lanyon was mistaken. (Hear, hear.)

The CHAIRMAN said he thought the unanimity with which the motion was just passed was sufficient assurance to Mr. Lanyon that they did not believe he attempted to court popularity at their expense. (Applause.) Addressing the deputation, Mr. Branwell said he was exceedingly glad to see them present, and hoped they had heard nothing to hurt their susceptibilities. He hoped they were convinced that the East Pool committee were doing all they could to support the interest of the neighbourhood, and that they would also support the interest of the miners.

Mr. RICHARD MICHELL, on behalf of his fellow-workmen, said the Chairman had stated the case perfectly rightly, and they were thoroughly satisfied with the action that had been taken. They admitted that all had been done that could be done for the benefit of the neighbourhood. (Hear, hear.)

Mr. HEARD asked within what time the preliminaries could be carried out.

The CHAIRMAN said it was impossible to answer the question definitely, as it would depend upon the action of the lawyers. The matter was now in the hands of Messrs. Paige and Grylls, and the committee were ready to go ahead as soon as Messrs. Paige and Grylls liked. They would press on as rapidly as possible, and if in the meantime Mr. Strauss would get Wheal Agar engine to work, East Pool engine would begin to work immediately.

Mr. ROGERS said certain formalities had to be gone through, but they would be hastened on as quickly as possible. A mine could not be purchased simply by resolution, and he was of opinion that Wheal Agar would have to go into liquidation, and the liquidator could sell the title of property to East Pool.

The meeting closed with a hearty vote of thanks to the Chairman.

NEW ZEALAND EXPLORATION COMPANY, LIMITED.

The statutory meeting of shareholders in the New Zealand Exploration Company (Limited) was held on Thursday, at the offices of the company, 30, St. Swithin's Lane, Sir WESTBY B. PERCEVAL, K.C.M.G., presiding.

The notice convening the meeting having been read,

The CHAIRMAN said: Gentlemen—We are unfortunate in not having to preside at our proceedings to-day our Chairman, Baron James de Hirsch, who has taken such an active interest in the affairs of the company from its inception, but who is unable to be present. This, as you know, is the compulsory general meeting of the company, which the Companies' Act requires to be held within four months from the date of the registration of the company. The proceedings are of a formal character, and although it is not necessary on such occasions to present to the shareholders a record of work accomplished by the company, I take the opportunity of making a few statements regarding its origin and policy. The New Zealand Exploration Company was formed in January last with a capital of £125,000, to acquire and carry on the work commenced by the New Zealand Syndicate. This was a syndicate formed by our Chairman, Baron James de Hirsch, the Compagnie Française de Mines d'Or, the Banque Internationale, and the West Australian and General Association. This syndicate had secured certain options and properties in New Zealand of a most promising character, which our company acquired on most favourable terms, at the same time providing ample capital to thoroughly examine and prove the properties. These included a valuable mining property in the Karangahake district, adjacent to the rich mines known as the Crown, Woodstock, &c., options over valuable mining areas in the Te Aroha district, and prospecting rights over a very large tract of known auriferous country in the Hauraki Peninsula. An expert of well-known ability and standing, Mr. E. J. Dunn, late geologist to the Government of Victoria, was appointed, and he has been actively engaged in New Zealand with a staff under him for the last 14 months (since March, 1895), and his reports are extremely satisfactory. You may ask how it is that before now you have not heard something of the various properties possessed by the company. The answer to this is that the directors from the first decided that they would not bring any of the company's properties before the notice of shareholders or the public until they had tested and proved their value to the fullest possible extent. This thorough examination has involved a considerable expense and delay, but I venture to think that the policy pursued by your directors will recommend itself to you. There must necessarily be in mining ventures a considerable element of risk, but the directors have endeavoured to reduce this risk to the lowest possible point. You as shareholders in an Exploration Company have the great advantage of not having all your eggs in one basket. Out of the number of properties which the company possesses, it is more than probable that one or more of your properties will prove of great value, and even one good property would give a handsome return to our shareholders. Our field of operations is at present confined to New Zealand, and we had the great advantage of being sufficiently early in the field to secure the advantage of the present revival which is becoming manifest in the mining industry of New Zealand. Up to the end of the year 1895, gold amounting in value to £51,351,002 has been exported from New Zealand, an amount in excess of the total output from the Rand. This gold was for the most part extracted with appliances and methods which, when compared with the processes now in use, may be termed primitive in the extreme, and in all probability more gold was lost in the tailings than was extracted. Many mines, which under the methods then employed were condemned as non-paying, are now, with the aid of scientific appliances, and a sufficient capital to work on a large scale, paying handsome dividends—the celebrated Waihi being a notable instance. These facts are probably not new to you, but they afford valuable evidence of the mineral wealth of the colony of New Zealand, and should satisfy you that our future may be looked forward to with great hope and confidence. If our meeting could have been held a month later I should have been able to make statements of a highly important character about several of our properties, but your directors being of opinion that the present time is not opportune to refer to the operations now being carried on, I must refrain from going into details, beyond stating that, with regard to one of the Karangahake properties, arrangements for an amalgamation with an old established and valuable dividend paying property are in a forward state. The combined property is equipped with a complete battery, and has

proved stone of great value, sufficient to last many years. I can, however, give you some particulars of one of our properties which your directors have great confidence in. This is the Te Aroha Mine, which is now in process of being turned into a company, with a working capital of £40,000 out of a total issue of £100,000. This mine covers an area of 290 acres, and is situate in the Te Aroha district, Hauraki Peninsula, New Zealand, comprising the old mines known as the New Find, Premier, Premier Extended, Vulcan, Regent, Colonist Sceptre, Sceptre Extended, &c. The returns from the Te Aroha Mines, gathered from the Government report from 1895, show that up to March, 1895, 49,600 tons of ore had yielded 50,904 ounces of gold at the rate of 1 ounce 13 grains of gold per ton only from surface workings. The property, according to Mr. Dunn's report, is traversed by a master lode running up to 100 feet in width, and cropping out on a length of more than 1000 feet. It can be traced for over 1½ mile across the property, with huge bodies of ore in sight. Besides this master lode there are on the property several reefs known as the New Find, Premier, Vulcan, Colonial, &c., from which the above stated results have been obtained in the past from the surface workings. In one of the low level tunnels, driven on our expert's advice, the old Premier reef fully 25 feet wide has already been cut, and assays from 30s. to 50s. per ton. There is on the property a large tonnage of tailings waiting for treatment; further, a 10 stamp battery, driven by a Pelton wheel, with buildings and foundations for 50 additional head; 8 Berdan's duly equipped; an assay office, blacksmith and carpenters' shops, and a comfortable manager's house. The property has the only valuable water right within reasonable distance, giving the required power up to 100 stamps in the three months of the dry season, and for any number during the other nine months of the year. Mining and building timber is found within a short distance, and is obtainable at very low prices. A line of tramway, which has cost over £18,000, takes the ore direct from the mines to the battery. Mr, E. J. Dunn concludes his extensive report by saying: —"It would be extremely difficult to match the property either for the size of its reefs or for the facilities that exist for cheaply winning the gold from it." We are in my opinion fortunate in having so many of our shares held in Paris, as it will secure for the company valuable financial co-operation in the future operations of the company. I feel sure that the value of New Zealand as a field for mining enterprise is only just beginning to be appreciated, and that in the near future the returns of gold will be such as to attract considerable attention to that country. The new processes for the treatment of low grade ore bring within the range of practical mining the vast quantities of low grade ore which exist in New Zealand, and which hitherto have been considered unremunerative. The climatic conditions of the colony, the distances from centres of political excitement, the abundant water and wood supply, and the easy means on local transit, are important factors in the consideration of the mining future of New Zealand.

A vote of thanks to the Chairman terminated the proceedings.

CARATAL MINING COMPANY (LIMITED).

The fourth ordinary general meeting of the shareholders in the Caratal Gold Mining Company (Limited) was held on Monday, at Winchester House, E.C., Mr. Robert Walker presiding.—The Chairman, in moving the adoption of the report and accounts, said in regard to the expenses up to date in connection with the liquidation of the Jurnari Company of the £24,359 mentioned in the balance-sheet, £7600 was claimed by the liquidator for his remuneration. In addition to this the liquidator also claimed a further sum of £1135, but, then on the other hand, there was the item of creditors in London, the amount being £1395. The question of the remuneration of the liquidator was now before the Court. The 9000 shares the company held in the Randt Gold Mining Company would, he thought, turn out a very profitable matter to the shareholders, while the same remark might be applied to the holding in the Orient Gold Mining Company. Having alluded to the considerable reduction in the London expenditure, the Chairman dealt with the difficulties which had arisen in respect to the tailings. As the shareholders were already aware, these tailings had overflowed on to another property, but the directors were fairly confident of being able to recover them in course of time.—Mr. A. Bull seconded the resolution.—A long discussion ensued, and eventually, after the motion for the adoption of the report had been rejected, a committee was appointed to confer with the directors. The gentlemen appointed were:—Major Smith, Major Murdoch, Sir Henry Bonbury, Mr. G. Davey, and Mr. S. Banning. The retiring director, Mr. R. W. Shackel, was not re-elected on the ground of expense, but the auditors, Messrs. Tribe, Clark, Painter, and Co., were reappointed.—A resolution providing for the alteration of Article 117, in order to permit of the division of shares, stock, or debentures of any other company among the shareholders by way of dividend or bonus, having been carried, the meeting concluded.

DAY DAWN P.C. GOLD MINING COMPANY (LIMITED).

The ordinary general meeting of the shareholders in the Day Dawn P.C. Gold Mining Company (Limited) took place at Winchester House, E.C., on Tuesday, Mr. Sinclair Macleay presiding. —The Chairman, in moving the adoption of the report and accounts, said no pain or expense had been spared during the past year to again make the mine a profitable one to work. A great deal of ground had been explored, and some stone of good quality found, but the quantity was very small in comparison with the amount of work done. However, there were indications of the ground becoming more settled, and they hoped before long to have the good results they had so long waited patiently for. They had still a good cash balance in hand for the carrying on of the work, but the discovery of a good lode would save them from exhausting their funds. A telegram received the previous day from the mine was of a very satisfactory character. Referring to the directors' fees, Mr. Macleay said in consequence of the views expressed by certain shareholders the board had agreed to take only half the amount they were entitled to for the present, foregoing the other half until such time as the mine was again returning a profit. He, however, wished to remind the proprietors that already they had received dividends to the amount of over £190,000. Although during the past year the receipts had not covered the expenditure, he assured them that the money had by no means been thrown away, as they had now got much nearer to that part of the mine, which would give them returns for the outlay.—Mr. Clipperton seconded the motion.—A long discussion followed, in which the opinion was strongly expressed that the directors should consent to forego half their fees entirely.—The Chairman, after consulting with his colleagues, said they all, with the exception of Mr. Buckland, who was at present abroad, agreed to take only half the fees they were entitled to.—The resolution was then put and carried.—Mr. G. H. M. Batten having been re-elected as a director, and the auditors (Messrs. Monkhouse, Goddard, Stoneham, and Co.) also reappointed, the proceedings terminated.

OTTOS KOPJE DIAMOND MINES (LIMITED).

An extraordinary general meeting of the shareholders in the Ottos Kopje Diamond Mines (Limited) was held at Cannon-street Hotel, on Tuesday, for the purpose of approving and sanctioning the carrying into effect of the scheme for raising the additional working capital, which is now urgently required, by means of a lease of the property of the company in South Africa.—The Chairman (Mr. Walter Newman), in moving the adoption of the scheme, said since he last addressed them their hopes that the property was about to develop into a paying concern had all been dashed to the ground in consequence of serious defects having been discovered in the machinery. However, it had been estimated that the plant could be repaired at a moderate outlay, but to do this additional capital was required, and it was by means of the scheme suggested that they hoped to raise the requisite amount. It was proposed to form a new company, to which the property would be leased under certain conditions, one of which was that the old company would be entitled to one moiety of the net profits made in each year.—Mr. Evans seconded the resolution, after which there was a long and animated discussion, several shareholders strongly criticising the policy of the directors.—Mr. Weaver, the Chairman of the Debenture Holders' Committee, stated that if the scheme was not approved the shareholders would lose their property, as the gentlemen he represented would step in and work the mines in order to still retain possession of them.—The resolution was carried with three dissentients.—The fifth ordinary general meeting of the company was then held, when the report and accounts for the year ending June 30, 1895, were adopted, and the retiring director, Mr. Frank Karuth, and the auditor, Mr. F. Haydon, re-elected.—A vote of thanks to the Chairman concluded the meeting.

JULIA TALTAL NITRATE COMPANY (LIMITED).

An extraordinary general meeting of the shareholders in the Julia Taltal Nitrate Company (Limited) was held on Tuesday, at the Cannon-street Hotel, Mr. H. W. Carter presiding.—Mr. G. Hume, on behalf of the shareholders' committee, in moving a resolution to the effect that it was desirable to reconstruct the company, and that, with a view thereto, the company be wound up voluntarily, and that Mr. G. S. Bankart be appointed liquidator at a fee of £100, he said it was proposed that a new company should be formed with a capital of £250,000, divided into 500,000 shares of 10s. each, for the purpose of acquiring the assets and discharging the liabilities of the old company. Each of the shares of the new company would be issued credited with 7s. 6d. paid thereon, leaving a liability of 2s. 6d. per share. The 400,000 shares would produce an available capital of £50,000, which would be employed in the payment of debts—including the debenture debt—in England, leaving a balance of about £34,000. Out of this sum the new company would undertake and agree with the liquidator to satisfy and discharge all the costs and expenses of the reconstruction scheme, all the legal debts and liabilities of the old company other than those already mentioned, and all the costs and expenses of winding up the old company and the transfer of the property. The issue of £250,000 of capital appeared to be a stumbling block to many shareholders, but it might be pointed out that at some future time it might be desirable to put up another officina, and funds would be required for that purpose. The money held in reserve would not, however, be expended without the knowledge and consent of the shareholders. It was proposed to bring on the board of the new company Mr. T. M. Thackthwaite and Mr. E. Walden Vincent, both of whom had practical experience as nitrate producers and managers.—Mr. A. Marshall Jay seconded the resolution.—After a short discussion the resolution was put and carried by a considerable majority.—Mr. Moutrie demanded a poll, which was at once proceeded with, and resulted in the resolutions being carried by 95,781 votes against 29,435 votes.

SUGARLOAF 25-MILE CEMENT LEASES COMPANY (LIMITED).

The first ordinary (statutory) general meeting of the shareholders in the Sugarloaf 25-Mile Cement Leases Company (Limited) was held on Tuesday, at Winchester House.—Mr. A. W. Lowe, who presided, said that the company was formed with a capital of £140,000, of which £40,000 was working capital. Subscriptions were invited to the extent of £65,000, the whole of which was applied for and allotted to the public. The property was duly transferred, and since that time developments were continued to the fullest extent possible. The company's property consisted of about 54 acres of good mining ground, in a district which contained similar deposits to theirs. In the first place they had to deal with large beds of gold and cement which were considered to be very valuable. The assays ran from a small amount to very many ounces per ton, and everything went to prove the general richness of these deposits. Even though they got but 1 ounce to the ton, this would give them a very fair return upon their capital. There was good authority for stating that below the cement beds, there were reefs of considerable value, so that after the cement—which would last for many years—was exhausted, they would still have further sources of profit. Already they had two shafts on the Great Scott shaft, 115 feet deep, and the Sugarloaf, 111 feet deep, and on the Catherine and the Ambrose, the other two leases, there were solid cement beds there 30 feet thick on both the leases. They hoped that the machinery would soon be started on the road, and that in a few weeks they would be able to start crushing. They knew they had a valuable property, and were confident that with good management they would have large and satisfactory dividends to offer to the shareholders in the future.—A vote of thanks to the Chairman terminated the proceedings.

COOLGARDIE GOLD SYNDICATE (SHERLAW'S) (LIMITED).

The second ordinary general meeting of shareholders in the Coolgardie Gold Syndicate (Limited) was held on Tuesday at the Great Eastern Hotel, Bishopsgate Without.—Mr. T. H. Watson, Chairman of the company, who presided, in moving the adoption of the report, said he believed there were very few companies who had accomplished what they had been able to accomplish. Their success had been largely due to Mr. Sherlaw, their very efficient manager, who had not only put before the company the right properties to deal with, but had also deterred them from dealing with other properties which might not have been so remunerative. Every property which they were able to put before the shareholders would be one which they might safely recommend for the investment of money. The selections which they had so far made had been eminently satisfactory, and the two companies they had brought out were, he believed, very sound investments. In regard to dividends, he believed that there were others coming forward, and that they would continue to receive handsome dividends for years to come. Mr. Sherlaw would continue to represent them, and since he knew every inch of the ground, there could be no doubt that their interests would be safe in his hands. As to the balance-sheet, it would be seen not only that the whole of the preliminary expenses had been wiped off, but that £7500 had been placed to a contingent fund.—The motion having been seconded, was duly carried, and the proceedings terminated with a vote of thanks to the Chairman.

EMPRESS OF COOLGARDIE GOLD MINE (LIMITED).

At an extraordinary general meeting of shareholders in the Empress of Coolgardie Gold Mine (Limited), held yesterday, at Winchester House, Sir Alexander Armstrong presiding, resolutions passed at a previous meeting, providing for the reconstruction of the company, were without any sort of discussion confirmed.

SHAMROCK GOLD MINING COMPANY (LIMITED).

The statutory meeting of the shareholders in the Shamrock Gold Mining Company (Limited) took place yesterday at Winchester House, E.C., when the Chairman (Mr. Robert Thompson) said it was a very pleasant matter for the directors to meet them that day, because they had a very satisfactory state of affairs to put before them. As was stated in the prospectus, special consideration had been given to the provision of the machinery, and they had every reason for believing that when the battery was started the results would be of a very gratifying character. In regard to the working of the mine itself the main shaft had been sunk 100 feet. This was not merely a prospecting shaft, but one which, if necessary, could be sunk 1000 or 2000 feet. The property was a very rich one, and, in the opinion of experts, was one of the best on the Coolgardie gold field.—Mr. Cotherill and Mr. Mitchell, both of whom had visited the company's property, also addressed the shareholders, expressing the conviction that the mine was a very promising one.—A vote of thanks to the Chairman and his co-directors terminated the proceedings.

THE private view of the Cabinent Picture Society's Inaugural Exhibition will take place at the Society's Gallery, 175, New Bond-street, on Saturday, May 16.

RHODESIA (LIMITED.)—We are informed that Mr. James Mitchell, J.P., banker, Airdrie, N.B.—director of Wilson and Clyde Coal Company (Limited), James Nimmo and Company (Limited), and a member of the London committee of the Clydesdale Collieries (Limited), and Home Coal Estates (Limited)—has been elected a member of the board of directors of this company.

CORRESPONDENCE.

We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.

THE ORIGIN OF THE BESSEMER PROCESS.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—It will be within the recollection of your readers that in my reply to the statement made by Mr. J. D. Weeks to the American Institute of Mining Engineers (in which he claims for a Mr. William Kelly the originality of the Bessemer process), I pointed out the fact that one of his witnesses—Mr. John E. Fry—gave us very minute details of the preliminary stages of Kelly's process, even to describing the kind of trolly on which the ladle of metal was conveyed to the apparatus, and how the metal was dumped into the open furnace, across the top of which pieces of sheet iron were laid to prevent the sparks flying too freely. I then went on to say:—"And here the evidence drops short, for it is clearly not worth their while to pursue the subject any further—it would be dangerous to do so; it would, in fact, 'let the cat out of the bag.' These discreet witnesses have given all the very interesting details as to the dumping in of the molten iron, even to the kind of 'little hauling car' which conveyed the metal to the apparatus. But it would have been infinitely more to the purpose if they had told us something about the way in which this metal was taken out, in what state of partial or complete solidity was it obtained, and whether it was soft malleable iron or hard and brittle 'plate metal.' They have told us nothing of the use of ingot moulds, in which the malleable iron must be made into ingot; they have told us nothing of the treatment of the metal after it was blown. Was it taken to the puddling furnace to be there converted into wrought iron, or was it rolled into bars or sheets from ingots formed while in a fluid state? Without all these essential facts all their testimony and affidavits are worse than waste paper, as they directly prove nothing; but the absence of these facts affords very strong circumstantial evidence that Kelly never had produced homogeneous malleable iron, and had never made an ingot by his process."

Now it appears that Mr. Fry was not guilty of this suppression of facts, for in a two hours' conversation with Mr. Weeks, Mr. Fry states that he gave him vivid personal recollections, antagonistic to his views, and the drawing he supplied proved that as late as the year 1858 (two years after Bessemer's patent) "Mr. Kelly's experiments and ideas had not progressed beyond the operations of the finery fire."

The letter accompanying these remarks shows that Mr. Fry was not guilty of this suppression of important facts, which went to show that up to 1858 (two years after my patent) Kelly's experiments had not progressed beyond the operations of the "finery fire." Mr. Fry also gave Mr. Weeks an article, published in the year 1894 in the Johnstown *Daily Democrat*, in which he says—"Gave what I believe to be the very first public announcement of Mr. Kelly's absolute failure to accomplish anything that could give ground to his claim of being the inventer of the pneumatic process of converting cast iron into its malleable products."

It is, then, not Mr. Fry who was guilty of this wholesale suppression of the truth, of which he says Mr. Weeks had full knowledge, and which he had derived from sources chosen by himself.

The honourable and disinterested love of truth and fair play which has prompted Mr. Fry to send me the following account of his long interview with Mr. Weeks shows how worthily Mr. Fry has risen from the ranks to the honourable position of manager of the great Cambrian Steel Works:—

"5417, Penn-avenue, Pittsburg, Pa., U.S.A., April 20.

"Sir Henry Bessemer, London, England.

"Esteemed Sir,—Your letter to the technical Press of England, in reply to Joseph D. Weeks' address to the American Institute of Mining Engineers in session at this city in February last, has been read by me. I have no desire to take part in the controversy which naturally follows a resurrection of this long-buried question of priority of invention of the Bessemer process, but only share the desire of all fair-minded persons that facts, rather than personal prejudices and interests, may be made matters of history.

"In your letter, referred to above, you re-quote a quotation by Mr. Weeks, which he credits to an interview he had with me a few days prior to the delivery of his address to the Institute. Your reference to the quotation indicates that it ended abruptly, because I, 'one of Mr. Weeks' witnesses,' had something to suppress as to the outcome of the experiment which would not be favourable to the views of Mr. Weeks as to the late William Kelly's claims to the invention in discussion. It is to advise you that the 'suppression' was by Mr. Weeks, and not by me, that I now recite to you the facts of the interview referred to, and others germaine to the discussion.

"While Mr. Weeks was preparing his address, he sought data by application to Mr. John Fritz, who was general superintendent of the Cambria works, at Johnstown, Pa., at the time Mr. Kelly went there to conduct his experiments. Mr. Fritz had no recollection of the events relative thereto, beyond having detailed me to assist Mr. Kelly in every way, by assembling such materials as he required, and to co-labour with him in his experimental work. Mr. Fritz, therefore, referred Mr. Weeks to me for data of Mr. Kelly's experiments. At Mr. Weeks' request I called at his publication office in this city, and the interview lasted two hours. During this time I gave him my quite clear recollection of what Mr. Kelly tried to do, what he did, and what he failed to accomplish which he hoped to do. Also I gave him a drawing, made by one of our shop hands at the time, of Mr. Kelly's apparatus of the year 1858, which drawing Mr. Weeks' designs having engraved for future publication if it can be made to fit his side of the discussion, which I believe it will not. Moreover, I gave him a copy of a publication issued in Johnstown, Pa., in the autumn of 1894, in which was printed an article written at that time by me under the caption of 'The Bessemer Industry: Johnstown's Contribution to it.'

"My interview with Mr. Weeks gave him vivid personal recollections antagonistic to his views. The drawing proved that as late as the year 1858 Mr. Kelly's experiments and ideas had not progressed beyond the operations of the 'Finery Fire,' and the printed article gave what I believe to be the very first public announcement of Mr. Kelly's absolute failure to accomplish anything that would give ground to his claim of being the inventor of the pneumatic process of converting cast-iron into its malleable products, or in substantiation of the rather vague claim allowed him in his first patent, issued subsequent to the issue of yours in this country.

"Now, with this presumably trustworthy testimony at his disposal, Mr. Weeks suppressed all except the insignificant extract he quoted relative to Kelly's first apparatus at the Cambria Works, and which you very properly characterised as an incomplete reference to the first Kelly experiments there.

"On October 24, 1894, I mailed to you a copy of the Johnstown publication above referred to containing my article, which must have miscarried in the post, or you would have known that my views were diametrically opposed to those of Mr. Weeks, for in it I made as plain as circumstances would warrant that Mr. Kelly was copying your methods as fully as his limited sources of information enabled him to do, and that he was doing only that. I herewith enclose the folio of the Johnstown publication referred to containing my article, and it should convince you that I am not 'one of Mr. Weeks' discreet witnesses.' Your letter to the Press assumes me to be in the sense that I wilfully suppressed the fact of Mr. Kelly's absolute failure in his experimentation at Cambria Works.

"In justice to myself, I beg to inform you upon what grounds I presume to be considered a competent commentator in reference to the matter in question. I worked with Mr. Kelly, first and last, at the Cambria experiments. I am the chief living witness of his work, and the person to whom he freely confided his hopes and success and fears of failure. Later, beginning in 1871, I worked and studied assiduously for the development of the process, then practically in its infancy in this country. The Cambria works made such progress in those days as astonished the world. In 1877, A. L. Holley, R. W. Hunt, of the Troy N.Y. Works, and R. W. Jones, of the (Carnegie) Edgar Thomson Works, united their efforts to induce me to limit the output of the Cambria works to the product of that time, on the ground that 'further quantitative progress would congest the market for steel and ruin the business.' Needless to say the proposition was declined, nor that they all experienced a change of view of the market later on. I was manager of the Cambria Steel Works at this time, and during the years prior to 1882, when they were producing more Bessemer steel than any plant of similar converter capacity in the world. I have been a leading exponent of the process here in its encroachment upon the field of the open-hearth in the manufacture of special steels, and especially in sustaining it against the assertion of many notable authorities that "its irregularity of physical behaviour unfitted it for structural work." The steel in the superstructure of the Brooklyn Bridge (East River, New York) made at Cambria was a sufficient answer to such. I have been in close touch with the process up to-day in its most advanced development, and these experiences with a keen recollection of events should qualify me as a fairly trustworthy witness. All my friends know me as such, and as a frank one.

"Mr. Weeks took advantage of me in his misuse of the short quotation referred to. This was misleading to you, as to others, hence your intimation of my holding opinions prejudicial to the facts and consistent with Mr. Weeks' argument adulatory of Mr. Kelly. Naturally, I feel that your reference to me as a biassed witness is an unmerited reproach. If almost a lifetime of service to employers faithfully performed does not entitle me to a reputation for honesty and integrity of expression, then I have lived and laboured in vain.

"Respectful consideration for the memory of those who have passed away demands as considerate a reference to their achievements as words at command will give expression. It is beautiful and dutiful to only speak kindly of the dead. In the accompanying article I have kept these considerations in view.

"The question as to whom the credit of the invention of the pneumatic process is due has, in my opinion, as in yours, been settled in your favour beyond controversy. It seems ghoulish work to resurrect it now, after its 40 years of sepulture, in any effort to advance undeserving interest. In my humble opinion, Mr. Weeks, as the President of the Am. Inst. Mining Engineers, made an impolitic choice of subject for his address, especially considering the material at his command, represented in this city by manufacturing establishments in sight and hearing of his distinguished audience.—Respectfully yours, John E. Fry."—Yours truly,

Sir HENRY BESSEMER.

Denmark Hill, Surrey, May 5, 1896.

COMPLETE AND CHEAP GOLD EXTRACTION.

TO THE EDITOR OF "THE MINING JOURNAL."

DEAR SIR,—Allow me to thank you for your great courtesy in publishing my letters with regard to Admiral Selwyn's "Zymean Process."

I have received such a number of letters in connection with this matter that it is impossible for me to reply to all of them. Might I, therefore, ask you again to let me occupy a small portion of your valuable space to endeavour to explain to my mining friends, who have taken an interest in this subject, what my position is with regard to it.

It is now 12 months since the "Zymean Process" was brought under my notice, and I commenced a series of experiments to satisfy myself as to the possibility of producing such chemical effects, by the use of di-chloride of sulphur as claimed by Admiral Selwyn in his patent.

The first test I made was what I considered a very crucial one. I took samples of the following refractory ores: Arsenical, copper, and iron pyrites, galena and blende from Welsh and Cornish mines, gold quartz from bankets, Transvaal, and rich gold ore from Matabele, containing 130 ounces of gold to the ton of ore, concentrated pyrites from the Thames foreshore, N.Z., refractory ores from Oruba, Ruab, Broken Hills, Kaboonga, and other mines, antimony, tin, nickel, cobalt from Cornish mines, rich silver ores from Mexico, and tailings from Queen's Birthday Mine, Australia.

These most refractory ores were ground up together and bulk samples taken for treatment by the "Zymean Process." In 20 minutes it was found that every metal was in solution, and the residuum after washing was found perfectly free of any metal.

This is only one of many hundreds of experiments made with refractory ores, and in each and every case the result has been the same—viz., perfect extraction of the metals after treatment of from 5 to 30 minutes.

Of course, these experiments have made a great impression on my mind and those of my friends who have witnessed them, but having in the past been deceived by laboratory experiments, I am determined not to allow any of my friends to go to any great expense with regard to this process, until I have had the opportunity of testing the practicability of it on a commercial scale.

I hope to be able to form a syndicate with capital to prove beyond doubt the value of this process.

I have already secured a mine in England which will give me the opportunity of settling the question once and for ever; till then I must ask my friends to patiently wait the result of the practical test.

Thanking you for your great courtesy.—Yours faithfully,

HENRY TAPP, Mining Engineer.

The Laboratory, 20, Bucklersbury, London, E.C., May 7.

TO THE EDITOR OF "THE MINING JOURNAL."

DEAR SIR,—I am obliged to Mr. Tapp for the information about the De Rigaud process, contained in his letter in the current number of *The Mining Journal*, but instead of convincing me that this process will be a practical success, I am afraid that my doubts are still further confirmed.

Mr. Tapp says that S_2Cl_2 in contact with water produces free hydrogen and free oxygen; this is very likely the case, but one does not gather this fact from M. Camille Grollet's paper, in which we are told that hydrochloric and in some cases sulphurous acids are produced, and there is no mention of free hydrogen or oxygen being formed.

Again, with reference to roasting, Mr. Tapp says that sulphur (presumably as a sulphide) *must* be present in the ore, otherwise the process fails. But M. C. Grollet tells us that S_2Cl_2 dissolves chlorine, and I imagine that this uncombined chlorine would act on the gold in a clean quartz ore.

Suppose, however, that the presence of sulphur is essential, and that we have to deal with an ore containing (say) 30 to 40 per cent. pyritic material composed of the sulphides of iron, copper, &c., with half an ounce of gold per ton, then the quantity of chlorine necessary to obtain the solution of these metals is very great, to say nothing of the subsequent trouble of separating and recovering them.

With regard to crushing, I understand that Mr. Tapp says that a 40-mesh is sufficient, and that this is coarser than is usual when crushing for amalgamation. Here I must differ, as in South Africa the mesh most commonly used is, I believe, a 30, where amalgamation and subsequent cyaniding are employed.

I have not had the advantage of Mr. Tapp's experience of the process, so I write only for information, and I should be very glad to see introduced such a cheap process as this professes to be.—Yours faithfully,

HUGH K. PICARD.

London, May 5.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—In 1884-5 in California, when in charge of mines there, great difficulties were encountered in the treatment of a rich but highly refractory ore called enargite, which had been tried unsuccessfully at all the mills in the neighbourhood.

Admiral Selwyn was one of the directors of the English company. He recommended a trial of his invention of that date, which involved roasting and treatment with saturated salt water, combined with a very small proportion of hydrochloric acid, patented in the U.S.A. by him in 1873. This has nothing to do with the S_2Cl_2 patent, which is far superior, as it does away with the roasting. But his first invention answered so well that I treated successfully 1040 tons of that ore, taking out 95 per cent. of the gold, silver, and copper contained in with a considerable amount of profit. I first roasted the ore in a two-decked reverberatory furnace, using the salt only after a thorough oxidising roast. Next it was put in the solving vat, and from the solution the copper was precipitated with iron as usual; the gold and silver in the residue were then extracted by amalgamation. I subjoin analysis of the ore by Messrs. Johnson and Matthey:—

	Per cent.
Copper	20·20
Iron	19·60
Arsenic	6·85
Antimony	1·95
Silver	0·175
Gold	0·003
Sulphur	36·30
Alumina	0·50
Siliceous and insoluble	14·30
Loss	0·122
	100·000

Duplicate cupellations gave:—

	Oz. dwts. grs.
Gold	1 6 3
Silver	101 18 9

LEWIS CHALMERS, M.A. and M.E.

72, Bishopsgate-street Within, May 6.

THE "JAMES FORREST" LECTURE.

"Physical Experiment in Relation to Engineering."

By Dr. Alexander Blackie William Kennedy, F.R.S., M.Inst.C.E.

(Delivered at the Institution of Civil Engineers at the meeting last Thursday, John Wolfe Barry, C.B., F.R.G., Vice President, in the chair).

IT has been the expressed wish of the gentleman in whose honour the "James Forrest" lectures have been instituted, that they should deal with the relation of various sciences to our own profession. To those of us (and they are many) who have long enjoyed his friendship, and who are to some extent familiar with the extent to which our profession is in his debt in matters innumerable, it is practically a duty to meet his wishes in such a matter. But it must be acknowledged that the duty—as regards the lecturer—must grow every year more difficult, as the field becomes limited by his predecessors; and even at present it was with no little nervousness as to the selection of a subject that I accepted last year the invitation to give this lecture in 1896.

There is perhaps no science, except those in the biological group, of which it might not be argued, with some degree of plausibility and reasonability, that the profession to which we all belong has a direct application. The sciences of mathematics and of physics, of chemistry and of geology, concern themselves with the exact statement of the nature and relations of facts and phenomena with which we, as engineers, have continually to concern ourselves. But the point of view of the purely scientific investigator and of the engineer, in regard to these facts and phenomena, are no doubt very different. In rare and exceptional cases, one man can play both rôles, but this happens so very seldom that for all practical purposes they may be regarded as distinct from each other. And no one who is not terribly narrow—on one side or the other—would deny that either might form a worthy life work for any man, however high his aims or ambition.

I excepted just now the biological sciences from those with which engineers were directly in touch. But in spite of this I confess that I have had a great wish for years past to devote some time to the working out of a theory of evolution in relation to engineering progress. I cannot help thinking that there is something in relation to things inorganic which closely resembles the position of natural selection in the organic world. The struggle for existence, which too obviously exists among engineers themselves regarded as organic beings, seems also to exist in effect among engineering productions. There is also among them a survival of the fittest, and the laws which determine what is the fittest at any time, and how the standard of fitness alters as time goes on, are probably capable of fairly exact statement—in correlation with the laws of general human progress—at any rate they are very well worthy of examination. This biologico-engineering investigation would be no doubt rendered more difficult by the fact that artificial selection continually comes in to help and accelerate, or it may be to hamper and impede, but in any case to modify, the inorganic equivalent of natural selection. I have found this whole subject a most tempting one, full of fascination, and to some extent also of surprises. But, finally, I felt constrained to leave it, at least as far as this lecture is concerned, to someone—some fortunate person—whose mind was not so overcrowded with the innumerable details of everyday work as my own, or who was able, in spite of these details, to obtain at the same time a broad and comprehensive view of the whole subject from a point higher and more commanding than any that I seemed able to attain to. I hope that in some future year I may have the pleasure of listening to a "James Forrest" lecture in which "Evolution in Engineering" may be adequately dealt with. For myself, I have found it necessary to be content with a much more limited subject, although one perhaps on which my own work gives me more right to speak, "Physical Experiment in Relation to Engineering."

We are all at this present time so familiar with the idea of physical laboratories—places in which physical experiment is carried out so systematically and continuously, both for purposes of scientific investigation and of education—that it is hard to realise how very modern an institution the physical laboratory is. Until quite lately the most distinguished investigators worked in laboratories which they had made for themselves and which were essentially their own private studies. The Royal Institution laboratories—originally, I think, rather chemical than physical in conception—nevertheless became to a great extent physical, and in this way were early and notable extensions of the purely private laboratory, and happily exist still to furnish admirable physical work. But it is practically only within the last 30 years that physical laboratories, as we know them to-day, have come into existence. Thanks very much to this growth of experimental and physical teaching, we have now an army of trained physical investigators distributed all over the country, whose principal occupation (besides teaching) is the making of researches in experimental physics, and in this way contributing to our knowledge of the phenomena of the world around us, the phenomena which it is our business to turn to the "use and convenience of man." Not only this, but within the last 20 years these have come into existence numerous well-equipped engineering laboratories, in connection with our technical colleges and schools. These engineering laboratories are, of course, simply physical laboratories modified in a certain special direction for our special purposes, and the investigations carried on in them are of the nature of physical experiment as fully and completely as those which are carried out in physical laboratories proper. The aim and scope of the two classes of experiment, however, differ considerably, as do their relation to our own work, and it will be my object this evening to put before you what, according to my own view, are the relation between these classes of experiment, and especially between each class and our own work. I need hardly say that I am bound to look at the whole matter throughout from the point of view of the engineer. I do not for a moment pretend that I am capable of taking up the position of the physicist, and, of course, I keep in mind also that I have to speak to an audience consisting essentially of engineers, and not of physicists.

Physical experiment, so far as it has relation to our own profession, may fairly be considered to serve three distinct purposes. In the first place, from the purely academic or educational point of view, it is most important and helpful in the training of engineering students. (And it is well to remember that although a great many of us were never engineering students, nor had any opportunity of obtaining such training, yet the most conservative must now recognise that in the future our sons and successors must look on the student stage as being as essential as the pupilage or the apprenticeship.) Then, secondly, what may be called purely physical experiment is necessary to supply us with most of our most important constants, whether connected with the thermal properties of steam, the electromotive force of a Clark cell, the density of water, the elasticity of steel, the coefficient for a *vena contracta*, or a thousand other matters of similar nature. Lastly, technical experiments, which are essentially physical experiments, but of a much more complex nature than those of the physical laboratory (although not on that account more difficult to carry out) are necessary for determining many matters; such, for example, as the efficiency of a dynamo, the steam consumption of an engine, the flow of a river, the resistance of a ship, or even the deflection of a girder under a moving load.

Let us consider, in the first place, the purely educative or academic type of experiment. Here the first requirement is the very simple one—which, indeed, may be served by an endless variety of experiments, extending far beyond the limit of physics—that the student should learn first to see and to measure, and then to write down what he has seen and measured. (Anyone who has had to do with laboratory work knows very well how necessary it is to differentiate in this fashion.) The experiments require to be, as far as possible, quantitative rather than merely qualitative; but, otherwise, the simpler they are the better. It is unnecessary here to go into any details about them, but with a view to emphasising their importance, it is worth while just to look for a moment at the sort of thing by which, in actual engineering work, these simple experiments may be said to be represented. Perhaps those whose work lies greatly in experimentation, like my own, know best how very hard it is to find assistants, unless they have been trained in a laboratory, who can be trusted at first even to take quarter-hourly readings of a steam gauge or a counter, or any such duty, ridiculously simple and easy as it appears. To ask an untrained man to count the revolutions of an engine which has no continuous counter attached, or to read the dials of an ampere hour meter, at exactly regular intervals of time, is merely to court disaster! The story is familiar of how Robert Houdin had so trained his faculty of general observation, that one look at a shop window would impress its contents on his mind more vividly and accurately than 10 minutes of hard looking would do in the case of an ordinary man. It is really just the same with the simplest of our observations. The ordinary mind does not naturally and at once see, and see accurately, the simplest thing that is before the eyes. One has to look, to exercise conscious mental effort, as well as merely to see, and we all of us require to be taught how to look, even in these most simple matters. And when the enforced looking has to be done at exactly a particular time, and no other, the average mind is apt to find the whole process an intolerable burden, all the more because it is inclined to despise the work as being too childishly easy for consideration at the very time when it is failing to carry it out!

So far as concerns the training of the faculties of observation at the stage of which I am speaking, probably chemical experiments would serve as well as physical. In certain respects possibly they might even be better, but with this we need not now concern ourselves. An important point is, perhaps, that in their earlier stages the student should not be allowed in any way to get the notion that his experiments are more than mere rough exercises. Any standard of accuracy which he can possibly attain is comparatively a very low one, and by the nature of the case the experiments he can do must be simplified down enormously before they can be put into his hands, so that at best he is only making a rough determination of one element in an artificially simplified operation, the full conditions of which he is not even in any position to understand. The actual figures which are obtained by him can under no circumstances be regarded as having any intrinsic value; and one of the difficulties of the case is, no doubt to persuade the

student to exercise his highest degree of care in obtaining results which at the same time he is told, or knows, are of no use whatever. The engineering student, I am sorry to say, is generally a terrible utilitarian. The unhappy professor has to enter into all kinds of subterfuges to get him to take an interest in, or do any careful work at matters which the omniscience of youth has once pronounced to be "useless." Later on, of course, he is wiser and a trifle less narrow-minded; but I suppose the stage of first yearness is one through which all of us have to pass in one fashion or another, to the grief of our pastors and masters, and to our own later regret.

More interesting to most of us, perhaps, than this purely academic matter is the consideration of physical experiment under the last two headings which I have mentioned.

First among these comes experiment which really belongs to pure physics, but in which we engineers may claim to be as much, or even more, concerned than the physicists, although both the difficulty and the honour of the experiment must fall to them. I suggest that we are even more concerned than the workers in pure science for two reasons, of which the first is that the whole of our interest is practically concentrated on what constitutes only a small part of the boundless region open to the physicist. He can spread his affections over glass and sealing-wax, and let them roam from ice to iron. We have only one love, or, at any rate, never stray very far from a limited number of matters which concern what I have heard contemptuously called "technical materials." He interests himself legitimately and equally in argon and carbon, in steam, and in ethyl-alcohol; he loves to extend his thermal conditions so as to get liquid air or gaseous carbon. We, on the other hand, are compelled to deal with a very small number of materials, and with these materials only in states in which we can readily obtain them. In fact, as every one knows, nineteen-twentieths of our liquid and gas problems affect only liquid and gaseous (or vaporous) water, and only the remaining small percentage is left to be distributed between coal gas and producer gas, liquid carbonic acid and anhydrous ammonia, and so forth. So far as the more or less "permanent" gases are considered, our interest is throughout perhaps rather chemical than physical.

Then, again, we may claim to have a first interest in certain physical results, because of the extraordinary frequency with which we have somehow or other actually to make use of them—I mean a real live use, and not merely a use in an examination question, or in a text-book or a lecture. Not only would our whole work become mere guess work without the knowledge of these results, but, having this knowledge, we are compelled by the very nature of our work to make such continual use of it that probably we are much more familiar both with the figures concerned and with the phenomena which they represent, than even the men to whose magnificent accuracy and unlimited diligence we owe their original investigation and determination. I mean, of course, such results as refer to the thermal relations of water and steam, to the calorimetry of fuels generally, to many hydrodynamic problems, to most problems in elasticity and what is clumsily called the strength of materials, to frictional questions, to innumerable problems relating to electrical matters, and certainly to an enormous number of matters bearing on mechanics, which, of course, is to be considered as a branch of physics.

I feel so strongly this sense of our paramount interest in certain physical problems that I have not hesitated sometimes to resent the way in which physical writers and speakers are occasionally inclined to instruct us how to express our ideas, for example, as to mass and weight, and sundry vital matters of that kind. I really think that people who have to deal with these matters as much, as often, and as thoroughly as we have, and who are on the whole reasonably competent beings, may be assumed to know how best to manage our own affairs in these respects. Mechanics are to us the breath of our nostrils, and not a mere vehicle for examination papers; and it should be remembered that the requirements of the latter case may be very different from those which I may venture to call "real life." I feel some satisfaction in remembering that the only fatal case of a misused "g" that I can call to mind was on the part of a physicist, whom we all admire none the less for the way in which he scolds us, but who in the very act of showing us the way we ought to use that symbol, proved conclusively that all submarine cables would break by their own tension while lying on the sea bottom! It would, perhaps, be hardly proper, or even safe, that I should here say anything, as I am much tempted to do, as to the vexed question of units, which from time to time seems to agitate many minds. Let me only suggest that, on the whole, it does not seem to me that the people who would be most affected by the change are at present those who are most anxious for it. In fact, admitting certainly a few notable and very distinguished exceptions, it really seems as if engineers in general were content to go on in their own way, unconscious of the terrible pitfal's and difficulties by which it is understood that they are surrounded on all hands. I quite admit, of course, that it by no means follows that the pitfalls do not exist, although I confess to being somewhat sceptical about their reality.

But having spoken so strongly of engineers as being the users of certain physical results, I must look at the other side of the matter. We engineers may have, as I urge, more interest in these matters than anyone else, but it is certainly true that we have not ourselves to thank for the determination of the results which we require and which we make so much use of. For practically the whole of these results—results without which, as I have said, our profession would hardly exist, would at best be a mere trade instead of (as we are proud to consider it) a scientific profession—we are indebted to workers in physical science pure and simple, men without the least taint or suspicion of technical or utilitarian intent.* It would, therefore, ill become us engineers if we were to say or do anything which should, even in the most indirect fashion, tend to belittle the work of pure physicists, on which every day shows us more how much we are dependent. Our gratitude is so real and so deeply seated that we need not, and do not, even resent the expression of regret which has sometimes been heard from a discoverer, that what he has done should be of any use whatever.

* I think probably the only notable exception to be made in this matter is in regard to scientific experiments relating to strength and elasticity, some of which have been made by engineers, and with a more or less definitely technical intention. But probably such men as Bauschinger, Martens, and Tetmajer are to be considered essentially as in the position of physical workers.

(To be continued.)

THE REPORTED DISCOVERY OF GOLD IN TRINIDAD.—The Colonial Office states that no confirmation had been received as to the discovery recently of rich mines of precious metals in the island of Trinidad. It was pointed out, however, that as portions of the island are now surveyed in view of the proposed extension of the Government line of railways, it was quite possible that discoveries of the kind mentioned might have been made more or less by accident.

AUSTRALIAN EXPORTS FOR APRIL.—Copper, 900 tons; tin, 100 tons.

CAPE GOLD EXPORT.—The Union steamship *Norman* sailed on Wednesday with £105,561 in gold. The total April export is valued at £727,993.

NOTES ON GOLD MILLING IN CALIFORNIA.

By ED. B. PRESTON, M.E.

Bulletin No. 6, issued by the California State Mining Bureau.

(Continued from page 559.)

No. 12. *Plumas County.*—The ore is free milling, and contains about 1¼ per cent. of sulphurets. It is delivered to the Blake crushers in the mill by an incline tramway, and the ore passes through the bins to the Challenge feeders. The stamps weigh 850 lbs. each, dropping 8½ inches 80 times per minute. The discharge varies from 6 to 8 inches, through No. 8 diagonal-slot punched screens, with a discharging surface to each battery of 45 inches in length by 6 inches in height. The mortar is furnished with a lip plate and a cast iron trough, which receives the pulp, also with a 5 inch inside plate. The pulp passes from the trough to the apron and sluice plates, which have a grade of 1¾ inches to the foot, and a length of 20 feet, and is then passed to the concentrators. Below the mill the tailings are picked up by outside parties and reground in arrastras. The tailings assay $2 per ton. The loss of quicksilver at this mill is about a flask for every 4000 tons crushed. The cost of milling does not exceed 50 cents per ton when using water power. The plates are cleaned every 24 hours. About 60 per cent. of the amalgam is derived from the batteries, which are cleaned up once a month. The headings are placed in an iron revolving barrel, and the panning out is done with a bates.

No. 13. *Plumas County.*—The ore is hauled to the mill by wagon, and is broken and fed by hand. The stamps weigh 750 lbs. each, drop 5 inches to 6 inches 80 times per minute, with a discharge varying from 6 inches to 8 inches through a No. 9 slot-punched Russian iron screen, crushing 1¼ tons per stamp per 24 hours. The battery is supplied with an inside plate about 6 inches wide attached to the screen; the latter is set slightly inclined. The screen frame leaves about 4 inches at the upper end of the mortar front open, in front of which and reaching nearly to the lip is a canvas curtain. The apron plate is 5 feet by 4½ feet, set on a grade of 1 inch in 11 inches; below the apron is a drop box, from which the pulp passes to the sluice plates; these are 10 feet long by 15 inches wide. The aprons are scraped every day with rubber belting, and the plate on the screen is cleaned once or twice a week. In dressing the plates, brine with an addition of sulphuric acid is used. About 20 per cent. of the amalgam is saved in the batteries, and about 80 per cent. on the plates. Neither concentrators nor canvas tables are used. One tank of quicksilver is used every six months, using 20 stamps.

No. 14. *Shasta County.*—The ores carries 1½ per cent. of iron and copper sulphurets, besides free gold, averaging $9 per ton. There are 30 stamps weighing 850 lbs. each, supplied with Challenge feeders working from the second stamp. These stamps are hung and dropped somewhat at variance with the usual custom, No. 1, the end stamp on the left, being placed 1 inch further from the side than is No. 5, the end stamp on the right, and the sequence of the drop is 5, 4, 3, 1, 2; the stamps never rising out of the water. It is claimed that by this arrangement a better swash is obtained in the battery. The stamps drop 5 inches, 92 times per minute, with a discharge of 6 inches to 7 inches, and crushing 2 tons per stamp per 24 hours. The mortar is supplied with front and back inside plates. The apron plate is 4 feet by 4 feet, set on a grade of 1¼ inch to the foot, followed by a double set of sluice plates, 16 inches wide and 16 feet long, with a grade of 1 inch to the foot. The apron plate is kept rather wet with mercury by frequent dressing. Burr slot screens, Nos. 40 and 45, are used. About 66 per cent. of the amalgam is derived from the battery. The pulp is concentrated on four Triumph and 10 Frue vanners, and is then passed to two canvas platforms, 36 feet and 24 feet long respectively, and 20 feet wide, divided into sections 2½ feet in width, covered with twill instead of canvas, which is said to give equally good results, and is considerably cheaper. These tables have a grade of 1¼ inches to the foot. The plates are scraped once a day, and the mill is cleaned up twice a month. The company chlorinate their own sulphurets, roasting in a small two hearth furnace, with a capacity of 1 ton per 24 hours.

No. 15. *Sierra County.*—On account of topography, the ore has to be elevated by a lift to the top of the mill. The stamps weigh 850 lbs. each, and drop 5 inches, 80 times per minute, with a 6 inch discharge through No. 7 slot-cut screens. The cams, bosses, and tappets are steel; the shoes and dies iron. The apron is 4 feet by 4 feet, with a grade of 1¾ inch to the foot, and is followed by a double sluice plate 16 inches wide, 12 feet long, and pitched 1¼ inch to the foot. The plates are not scraped at regular intervals; in dressing them, lye is used occasionally. The plate on the screen, 6 inches by 52 inches, is cleaned every other day. About 86 per cent. of the amalgam is saved in the battery, and the tailings only show a trace of gold. Johnston concentrators receive the pulp from the plates; these concentrators are run with 110 to 112 side strokes per minute, the belt revolving once in seven minutes. The waste from the concentrators is forced to a higher level by an ejector, and then passes through a pointed box. The heavy material is then passed through a series of drop boxes and discharged into the river.

No. 16. *Sierra County.*—The ore carries a considerable amount of clay, and is delivered to the mill over an incline track to a Blake crusher. The stamps weigh 850 lbs. each, and make 75 to 78 drops of 6 inches per minute, with a discharge varying from 7 inches to 9 inches, using a No. 10 slot cut screen. The inside of the mortar is furnished with front and back plates, the former 8 inches, the latter 4 inches wide. Cast iron shoes and dies are used, crushing 1¼ ton to the stamp per day. The order in which the stamps drop is 1, 5, 2, 4, 3. The apron plate is the width of the mortar, is 6 feet long, and is set to a grade of 2½ inches to the foot, followed by 12 feet of sluice plates, 14 inches wide. As there are but few sulphurets, no concentrators are in the mill. The apron and sluices are dressed every day, but only scraped once a month; cyanide of potassium is used in dressing the plates. The battery is cleaned once a month. About 5 lbs. of quicksilver is used to every 1500 tons. About 70 per cent. of the amalgam is obtained from the battery.

No. 17. *Tuolumne County.*—This mill of 10 stamps crushes quartz containing little or no free gold, but with 3 per cent. of sulphurets, chiefly iron, The stamps weigh 1000 lbs. each (fed by self-feeders), working at 96 drops of 6 inches, crushing 2¼ tons per stamp. Chrome steel shoes and dies are used which wear about 1 inch per week. No. 30 brass wire screens are used, the screen having a slight inclination, 10°. There are no plate used on the inside of the battery, and only one apron plate, 4½ feet by 6 feet, to each five stamps, which is dressed daily. It is set to a grade of 1¾ inches to the foot. Nearly all of the amalgam is derived from this apron. The pulp passes from the aprons through a series of troughs to four Frue concentrators with corrugated belts, using a large amount of water. These are succeeded by wooden troughs, 8 inches wide at top, spreading to 16 inches, which divide into three troughs, carrying equal amounts of pulp, thinned by adding 3 miner's inches of clear water above the forks. These deliver into a V trough running at the head of a canvas platform, divided into 12 sections, 22 inches wide and 75 feet long, set on a grade of 1½ inches to the foot. These tables are covered with No. 7 duck, which lasts 90 days. The V trough has extending over its entire length a square 8-inch trough, for clear water. The pulp flows from the V trough through 1 inch auger-holes (two to each section of the canvas), supplied with wooden plugs to regulate the flow of the pulp, the clear water trough being similarly supplied. Every half hour the flow of the pulp is arrested on a section, while the flow of clear water is continued until the lighter sands are washed off, leaving the sulphurets on the canvas. The flow from the tables is delivered into V boxes running across the end of the canvas platform, with a grade from the outer edges to the centre, and delivered to a second canvas table through, where it undergoes a similar treatment. After removing the lighter sands from the upper platform, a sheet iron pan is placed below the end, which extends to a separate trough, into which the sulphurets adhering to the canvas are swept with the aid of the flowing clear water, and conveyed to a settling tank divided into two sections in such a way that when one section is filled, the sulphurets are run into the second section, allowing the first to be shovelled out, each section being treated consecutively. When No. 1 is being swept, No. 2 has the pulp flow shut off, making the operation continuous. After sweeping down a section, the plugs from the pulp trough are removed and the clear water shut off, permitting the concentration to be renewed. It requires the attention of two persons, night and day, to attend to these two platforms. Everything but the sweepings pass over the second canvas platform and then go to waste. The sweepings from the second table are treated in a manner similar to those from the upper one. Accessory to these two sulphuret settling tanks are two large slime settling tanks; these are divided into 20 sections, 2 feet square, 20 feet long, divided from each other by 2 inch plank extending entirely across the tank. Within 2 feet of the ends, on alternate sides of these divisions, slots 4 inches deep and 2 feet wide are cut to permit the water, which is clouded with the fine slimes, to pass from one division to the other. At the end farthest from the entrance, the water (still somewhat clouded) runs to waste. The slime water from the first settling tank passes through the second. The sulphuret settling tanks are shovelled out every few days, while the slime settling tanks remain undisturbed for months. The material from the vanners, upper and lower settling tanks, and sometimes from the slimes, is mixed by weight before going to the chlorination works. There are 2400 square feet of canvas tables and 5000 square feet of settling floor.

No. 18. *Tuolumne County.*—This mill is working on quartz carrying both free gold and sulphurets. The ore is delivered from the mine at the top of the mill into a general ore bin, for the entire 40 stamps, after passing through the rock breaker. The bin has a capacity of 650 tons, and delivers the ore into the self feeders direct. The stamps weigh 850 lbs. each, and steel shoes and dies are used. Each stamp has its separate guide, made of two blocks of hard maple, fitted together and bored through to receive the stem. The front block is first put in place, the stem set in, and the rear block dropped in behind a cast iron piece, which is secured by wooden wedges driven in from above, so that when required it can easily be removed. The pulp from the battery falls over a 9 inch silvered plate, the width of the mortar, into a box 12 inches square, supplied with six 1 inch holes, 8 inches apart, near the front lower edge, that permit the pulp to flow on a 4 feet by 5 feet silvered plate, divided in two parts by a wooden strip down the centre. The fall from the box to the plate is 3½ inches. The apron plate is mounted on a carriage, which can be pushed back, giving access to the battery, the 4 inch grooved wheels in front running on a half-round iron strip placed on the sides of the lower plate frame. From the movable apron the pulp passes over 12 feet of plates, divided into three 4 feet sections, with a dividing strip down the centre. 16 concentrators are used.

No. 19. *Tuolumne County.*—This mill presents some peculiarities in its construction. There are 10 stamps of 850 lbs. each, with steel shoes and dies. The stamps are given 100 drops per minute, dropping 4½ inches, with only 2½ inches discharge to commence on, through a No. 50 brass wire screen. The rock breaker (Wheeler pattern) and ore bin are set on a rock foundation, the frames being entirely disconnected from the rest of the building, to counteract the vibratory motion of the crusher. In placing the mortar block and mortar, the space around the block was filled in with concrete, and a double thickness of tanned belting laid between the block and the mortar, after which a fire was built in the latter until it settled into the belting. The wear of the shoes and dies is about 1 inch per month, and the duty of the stamps 1 1-5 ton per stamp. When the dies are partially worn, a 2 inch iron plate is placed under them, to maintain a regular discharge. The inside of each mortar is provided with cast iron side plates and a sheet iron covered board at the back, to prevent wear on the mortar. The apron plates are set 12 inches out from the mortar. The pulp from the battery passes over a 9 inch plate into double pointed boxes of iron, bolted on the front of the mortar, and thence through a couple of 2 inch pipes to a spreader and to the silver-plated apron. The apron is followed by double sluice plates, each 2 feet wide and 10 feet long, all set on a grade of 1¼ inch to the foot. Two-thirds of the amalgam is obtained from the battery. No concentrators are used.

(To be continued).

NEW ZEALAND'S GOLD RETURNS

For four weeks. To hand by this mail.

		Ore. Tons.	Bullion. Ozs.	Value. £
UPPER THAMES.				
Waihi G.M. Co.		1,950	5,580	6,002
Ditto tailings		—	—	664
Waitekauri G.M. Co.		135	1,144	929
New Zealand Crown Mines		442	1,288	2,126
LOWER THAMES.				
Adelaide tribute	loads	7	12	30
Broken Hills claim	cwts.	18	56	69
Cambria G.M. Co.	loads	18	9	26
Cardigan G.M. Co.	loads	10	5	15
Freedom G.M. Co.	loads	10	8	20
Hazlebank G.M. Co.	loads	32	6	16
Little Willie claim	lbs.	28	17	51
May Queen G.M. Co.	loads	588	541	1,531
Moanataiari G.M. Co.	tons	480	314	833
Moanataiari tribute	tons	40	26	67
Orlando G.M. Co.	loads	15	8	23
Waiotahi G.M. Co.	tons	190	233	638
COROMANDEL.				
Hauraki G.M. Co.	tons	340	2,398	7,194
Hauraki North G.M. Co.	tons	70	98	296
KUAOTUNU.				
Kapai-Vermont G.M. Co.	tons	308	400	1,020
Great Mercury G. M. Co.	tons	480	292	730
Try Fluke G. M. Co.	tons	452	235	553
Fortuna G. M. Co.	tons	3	30	90

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

ACHILLES.—The following cablegram has been received from the managing director at the mine:—"Crushed 600 tons, obtained 560 ounces of gold. Prospect thoroughly good. 200 tons on hand."

ARIZONA COPPER.—The directors have received the following cable message from Clifton, viz.:—"364 tons of black copper and 388 tons of matte produced during the month of April." This is equivalent to about 636 tons of black copper.

ARMADALE.—The undermentioned cablegram has been received from Mr. Frank Nicolas, the consulting engineer:—"Armadale, Incline shaft 100 feet, vertical shaft 90 (?) feet deep. The two shafts are now connected along the course of the vein. You will be pleased to learn from the nature of the wall rock; expect to reach water level during the week." A further cablegram also states:—"Have struck water."

BALAGHAT MYSORE.—The directors have received the following cablegram from Mr. Richards.—"336 ounces of gold obtained from 2900 tons of tailings."

BARRETT GOLD.—Owing to alterations at the cyanide works, 1100 tons of mixed ore and tailings were treated during April, which yielded 400 ounces gold. Four additional cyanide vats had arrived at the mine, and were in course of erection.

BLAGROVE'S FREEHOLD.—The directors have received the following telegram from the manager, viz.:—"Shaft has been sunk for the month 11 feet. Crosscut has been driven 49 feet. Total length 92 feet."

BROKEN HILL PROPRIETARY.—The manager cables that the available yield for the week ending May 7 was 7505 tons of ore, yielding 474 tons of lead, containing 145,842 ounces silver. The price of the shares in Melbourne is £2 6s. 6d. buyers.

BURMA RUBY MINES.—The result of the mining for the month of April was 14,400 loads washed, producing rubies valued at 29,000 rupees.

CARIBOO GOLD FIELDS.—The directors have received information from their agent at Barkerville that the Bill promoted by the company for consolidating the company's properties, which embody the whole of the famous Williams' Creek, Cariboo, together with water, timber, and mining rights, has been passed, granting said consolidation for a period of 40 years, and that the said Bill has received the Royal assent. The contractors for the completion of the ditches left unfinished last season will commence operations as soon as the ground is clear of snow. The 2 miles of steel pipes for hydraulicing are delivered at Ashcroft, and arrangements for haulage to Williams' Creek are being made, so that it may commence when the road is open. Good progress is being made with the drain tunnel, which is still showing good prospects.

CARRINGTON GOLD.—In reply to a cable from the board, the following has been received:—"Have just started prospecting Caledonia reef. Cannot get trial crushing before June 14. No change to report."

CASSEL COAL.—A cablegram received gives the output for the month of April as 26,500 tons, being 1500 tons in excess of any previous production.

CHAMPION REEF (Nannine, W.A.)—Translation of cable received from Mr. Ford, and dated Melbourne, May 2:—"The resident manager's report, May 1, faces all drives right along from Blacksnake to north of old shaft, and shaft opposite centre quarry shows best average stone yet found; the deepest workings and developments in the lower levels, fully in accord with expectations, have been realised."

CHAMPION REEF.—A telegram has been received from the mine, dated May 4, giving last month's return of gold:—"5000 tons of quartz produced 6209 ounces of gold; 1820 tons of tailings produced 434 ounces of gold; total production for the month, 6643 ounces of gold. The superintendent adds that the total quantity of stone passed through the mill was 5800 tons. Of this he estimates 800 tons was country rock intermixed with the quartz. Captain Rowe has been instructed that in future he must telegraph the gross tonnage crushed, as is done at the other mines on the field."

CHARTERS TOWERS.—A cablegram has been received from the local directors to the effect that at a depth of 183 feet an important body of ore has been struck; further particulars to follow.

CLYDE.—Cable received from manager, Coolgardie, April 29:—"Crosscut has been driven 25 feet. The gold lies in iron pyrites. Discovered rich ore Bobby Burns shaft. The machinery has been sent from Perth; expected to arrive to-morrow."

DAY DAWN BLOCK AND WYNDHAM.—Cablegram from the general manager at Charters towers gives the following result of the crushing for the fortnight ending May 2:—"Tons crushed, 1100; yield of gold, 1252 ounces; approximate value, £4325; fortnight's expenses, £1900."

DE LAMAR.—The following cablegram has been received from Captain J. W. Plummer:—"Labourers and miners have struck for higher wages. Everything quiet."

DON PEDRO.—Produce for the month of April 271 ounces, from 450 tons, equal 12 dwts. per ton.

DURBAN-ROODEPOORT.—The following results for April have been received by cable:—"Quartz milled, 8375 tons; 65 stamps; 28 days; 3948 ounces; tailings treated, 6430 tons; 28 days; 1642 ounces; total, 5590 ounces."

FORBES REEF.—A telegram has been received from the mines stating that the result of the crushing for the month of April was 102 ounces of gold.

FREDERICK THE GREAT—The following cable has been received from the manager at Bendigo:—"About to commence sinking; 20 stamps, eight hours daily."

GELDENHUIS DEEP.—The manager of the mine cables the April output as follows:—"Mill ran 27 days, crushing 8510 tons from mine and 3690 tons from development dump, yield 2463 ounces. Cyanide treated 7800 tons, yielding 1583 ounces, total yield 4046 ounces. Profit per month £3400."

GINSBERG.—The Johannesburg Consolidated Investment Company (Limited) announce receipt of the following cable from the above company:—"Production for April, 754 ounces from 1290 tons battery; 421 ounces from 972 tons cyanide; total, 1175 ounces; 10 stamps, 28 days. The total production for the previous month was 938 ounces."

GRAY'S GOLDEN CROWN.—Cablegram dated Coolgardie, May 3, says:—"Gray's. Main shaft is now down 50 feet. Rock has become much harder; shall recommence timbering next week. The depth of the underlie shaft is 110 feet. Lode maintains its width and value."

GULLEWA.—The following cable has been received from the company's agents at Melbourne:—"Mines are looking well. Development proving equal to expectation. Pushing forward as fast as possible with the erection of the machinery." Information has also been received from the agent in Melbourne that the property has been legally transferred to the company.

GOLDEN HORSE SHOE.—Translation of cable received from Mr. F. Bowes Scott, and dated Coolgardie, May 4:—"A trial crushing of 50 tons has yielded 10 ounces 17 dwts; loss of treatment is 7 dwts. per ton."

GREAT EASTERN COLLIERIES.—Cable, dated May 4. The output for last month was 16,500 tons.

GUY FAWKES REEF.—Extract from the *Manica Review* of the 15th March: "Mill is continued night and day, the works at the different tunnels being pushed on."

HALL MINES.—The following are the results of the smelting operations for the month of April:—2788 tons of ore were smelted, yielding 225 tons matte, containing (approximately) 103 tons copper, 64,948 ounces silver.

HANNAN'S BROWNHILL.—The following cablegram has been received to-day:—"Have struck very rich ore west crosscut, winze No. 2."

HAURAKI.—The directors have received the following telegram from the manager:—"Total amount crushed, 300 tons; ounces of gold, 2121; approximate cost, £1700; profit, £4800. Resume sinking shortly. In the 220 north No. 2 reef is 20 inches wide, the ore shows free gold in blotches." Also the following:—"The 220 feet level has been extended 100 feet. The reef shows visible gold."

HENRY NOURSE.—Crushing for April:—29 days, crushed 6900 tons, produce 4169 ounces; cyanide works 5020 tons, produce 2054 ounces; total, 6223 ounces.

ISLE OF MAN MINING COMPANY.—The secretary has sold 100 tons of this company's ore at £8 15s. 6d. per ton.

JAVALI.—The directors of the above company have received a telegram from their manager, dated May 2:—"Mine in working order; month's profit £400 sterling."

JOKER (Yalgoo) GOLD MINES.—The directors have received intelligence by cable, from Mr. C. C. Macklin, their agent at Perth, that an abundant supply of water has been struck upon the Queen of Spades, lease No. 145, the property of this company.

KAPANGA.—The directors have received the following telegram from the manager—viz., "Shaft has been sunk 12 feet for the month, total depth 927 feet. Have intersected a vein in the shaft showing specks of visible free gold. Is most satisfactory." Also the two following: "At the bottom of the shaft the width of the reef is 3 inches, pieces of quartz very rich in free gold caused great excitement." "Shaft has been sunk 6 feet for the week. We have again intersected another vein in the shaft. The two veins appear to merge into each other, width not yet determined, showing specks of visible free gold The country rock is heavily charged with iron pyrites. Must sink the shaft deeper before we can open up. Future prospects of the mine are good."

KATHLEEN CROWN.—The directors have received the following telegram from the manager, viz.:—"Have commenced to sink the shaft."

KING SOLOMON GOLD MINES.—The following cable has been received from the engineer at the mine:—"No. 1 shaft. Have struck reefs at depth of 100 feet, 3 feet in width, full of visible gold, crushing 5 tons, will telegraph result."

KOFFYFONTEIN.—Returns for the month of April are 4750 carats.

KOMATA REEFS.—The directors have received the following telegram from the manager—viz.:—"Have cut Lavington's lode in the crosscut 16 feet in width; have not yet got to the footwall. Aaverage assay value of ore £2 15s. per ton.—Argall's reef. Average assay value of ore £4 10s. per ton. Developments opening up splendidly." Also the following:—"Lavington's lode is 20 feet in width, a fine body of ore."

LADY EVELYN.—The following cable has been received from the manager:—"No. 1 south shaft 70 feet. The width of reef is 3 feet 6 inches, full of visible free gold. No. 2 shaft 80 feet. The width of reef is 2 feet 6 inches, abounds in free gold."

LADY LOCH.—The directors have received the following cablegram from the mine:—"Crushing of 200 tons completed, yielding 2287 ounces of gold amalgam; retorted gold 892 ounces; refined gold 854 ounces. An average sample of the tailings assayed give 6 dwts. to the ton. Have deposited gold with the Bank of Australasia, Coolgardie. Will duly advise you by cable as regards the assay of the blankets."

LADY MARGARET.—Copy of cable received from this company's local agents in Coolgardie:—"Margaret. Will deal with this matter by next mail. Manager's very excellent report. Weekly cables in future."

LAKE VIEW AND BOULDER JUNCTION.—The following is an extract from a letter received by this mail:—"The very satisfactory development at a depth of 200 feet in the Lake View and Great Boulder Mines have had an excellent effect, and should give stability to the mines which carry their lodes."

LIMERICK GOLD.—The following cable has been received from the manager of the mines:—"Have struck payable ore. Flow will average 7 ounces to the ton."

LISBON-BERLYN.—A cable has been received from the manager giving the following results for the month of April:—"Ore crushed, 1800 tons; ore and tailings treated by cyanide, 1575 tons; bullion recovered, 763 ounces." An office note states:—While the above return appears to be 79 ounces less than the previous month, the approximate value of the bullion is greater by nearly £300.

LOMBARDY GOLD MINE.—The following cablegram has been received from the manager, dated Cue, May 6, viz.:—"Have cut in the main shaft ore assaying 2 ounces of gold per ton. The lode looks exceedingly promising."

LUCKY GUSS.—A cable has been received from Cripple Creek, stating that the interests of this company are not affected by the great fire. The United States patent of the property was received by last mail. Crosscutting to the Orpha May lode at the 300 feet level is progressing satisfactorily.

LYDENBURG MINING ESTATES.—Results for April:—"From mill. Crushed 5143 tons, yielding 3346 ounces of gold. —From cyanide works. Treated 2715 tons, yielding 2058 ounces of gold; total yield, 5404 ounces of gold; total value of month's output, £15,094."

MENZIES CONSOLIDATED.—Cable information has been received from the manager at the mines to the following effect:—"Princess Eva claim. Shaft 150 feet deep; water 100 gallons per hour; have erected poppet heads; hoisting engine is now in course of erection.—Princess May claim. Shaft 130 feet deep; lode 4 feet wide, worth 3 ounces gold per ton. We are prevented sinking by water in the shaft. We shall commence the erection of the machinery (hoisting) within the next few days. St. Alban's group west shaft 105 deep; north shaft 93 feet deep."

MENZIES GOLD REEFS PROPRIETARY.—Cable information has been received from the manager at the mines to the following effect:—"Friday claim water shaft. The stope looks very well. Reef average in winze 2 feet. Sample assayed 9 ounces 13 dwts. per ton."

MENZIES PIONEERS.—The following cable, dated May 2, has been received from the mine manager:—"Report of April 9, 1404 south drift 45 feet level winze, progress 21 feet. The average width of the vein is 10 inches. Average assay of ore is 103 dwts. 5 3-20 ounces per ton. North-west shaft has been sunk 2 feet deeper; east crosscut 9 feet.—3032 south shaft. Depth of the shaft is 21 feet. The vein is pinched out.—North shaft: Depth of the shaft is 20 feet. The vein is 9 inches; also contains visible gold."

MARBELLA IRON ORE.—The directors have received the following telegram from the mines:—"Output of ore for April, 2233 tons."

McKENZIE.—The consulting engineer, Mr. Frank Nicholas, has cabled stating that crushing commences on the 15th inst.

MESQUITAL DEL ORO.—The following cablegram, giving the result of the April mill run, has been received from the mine:—"50 stamps ran 749 hours (31 days 5 hours) and crushed 3464 tons of ore, yielding 749 ounces of bullion, value about £2650."

MONTANA.—April monthly return. By cablegram from the mine, the directors are informed that the total output for April was 6100 tons of ore which contained gold, 2160 ounces; and silver, 9320 ounces. The estimated realisable value of the same is $49,200.—Expenditure. Working expenses on revenue account, $29,200; outlay on developments, $8400; extraneous expenses, $1400; permanent improvements and machinery, $200; total, $39,200; net result, $10,000.

MOUNT MORGAN (Queensland).—Result for the month of April:—Tons chlorinated, 7966; gold returned, 12,608 ounces.

MURCHISON NEW CHUM.—We have received the following from the secretary:—I am directed to state that there is no truth in the statement recently published that a rich strike has been made in the bottom level. Cable news from the mine has been received as follows:—"Bottom level reef has been proved 5 feet. The reef is very promising, but we have not met with any payable stone.

MYSORE REEFS (Kangundy).—The London offices have received a cablegram from the mine, dated May 6, giving last month's return of gold as follows:—"182 tons of ore crushed has yielded 81 ounces of retorted gold."

MYSORE.—Telegram from the mine gives the return of gold for the month of April as follows:—"5714 tons of quartz produced 8088 ounces of gold. 3300 tons of tailings produced 601 ounces of gold. 1705 tons of tailings (cyanide process) produced 280 ounces of gold. Total production for the month, 8969 ounces of gold."

NIAGARA CONSOLS.—The whole thing has been satisfactorily carried out. The mine is being worked. I have got a very good lot of men. The shafts require fresh timber. Will continue sinking.

NIGEL.—Last month's crushing yielded 914 ounces battery, 1087 ounces cyanide; total, 2001 ounces.

NEW CHARTERS TOWERS.—A cablegram has been received from the local directors to the effect that at a depth of 202 feet a good body of ore has been struck; further information to follow. Water still very heavy.

NEW CHUM GOLD MINES.—The following cable has been received from Mr. L. A. Samuels:—"New Chum (Bendigo). Since last report the main shaft has been sunk 5 feet, total from plat 33 feet, and from surface 585 feet. Have started crushing, but cannot crush more than 20 tons this week, as work has been retarded by an influx of water. The reef at No. 6 level (552 feet) shows good gold; width 14 feet."

NEW CRŒSUS.—Production for April (60 stamps 25 days), 2441 ounces.

NEW GUADALCAZAR QUICKSILVER.—The following cable has been received from the mines:—"I send you draft for £500. I will commence burning ore in a short time."

NEW RIETFONTEIN ESTATE.—The Johannesburg Consolidated Investment Company announce receipt of the following cable from the above company:—"Production for April 2327 ounces, 50 stamps 28 days."

NEWHOUSE TUNNEL.—The following cable has been received from Denver, dated May 2:—"We have driven during the past month 185 feet."

NUNDYDROOG.—A telegram has been received from the mine giving the return of gold for the month of April:—"2740 tons of quartz produced 3374 ounces of gold; 680 tons of tailings produced 189 ounces of gold; total production for the month, 3563 ounces of gold."

OOREGUM.—A telegram has been received from the mine, dated May 4, giving last months' return of gold:—"4924 tons of quartz produced 5197 ounces of gold; 4989 tons of tailings produced 922 ounces of gold; total production for the month, 6119 ounces of gold."

ORIENT.—The secretary advises receipt of the following cable, dated Cairns, Queensland, May 4:—"Will commence crushing in the course of a few days."

PREECE'S POINT PROPRIETARY.—The directors have received the following telegram from the manager, viz.:—"Shaft has been sunk 27 feet for the month. Total depth, 126 feet. Water increasing."

ROSE HILL UNITED.—Cable report for week ending May 2: "Main shafts and crosscuts proceedings.—Lease 1599. The width of reef is 5½ feet, leader cut on the surface, 1 foot in width, gold-bearing quartz equal to 4 ounces per ton. Main reef proved the whole length of the property. It will take 18 days to get crushing."

SALISBURY-MURCHISON GOLD MINE.—Copy of cablegram received from Mr. Edwin Wattis, the company's general manager:—"Salisbury. Trial crushing, level No. 1, engine shaft. 136 tons; total gross yield 174 ounces."

SHERLAWS.—The following cable has been received from Mr. Sherlaw:—"Crushing in first rate style; expect the result will be more than 3 ounces to the ton; shall clean up May 9."

SHEBA GOLD.—The following cablegram, announcing the return for the month of April, has been received from the general manager:—"3500 tons of ore, 7300 ounces; 3300 tons of tailings, 2240 ounces; 93 tons of concentrates, 800 ounces; total, 10,340 ounces. The mill has run 28 days. The body of ore is getting poorer."

SILVER KING.—Cable from manager at the mines, April:—"Mill worked 27 days. Crushed 2000 tons. Produced 16,000 ounces. shipped 14,000 ounces. Estimated expenses $9500. Bullion on hand 5200 ounces."

SOUTH BENDIGO GOLD MINES.—The following copy of cable received from Mr. L. A. Samuels:—"Since last report the winch plat at 792 feet has been completed, and plunger workings fixed. Sinking has been resumed."

SOUTHERN NEW CHUM.—The following cable has been received from Mr. L. A. Samuels:—"Southern New Chum (Bendigo). Shaft has been sunk 10 feet, total from surface 160 feet. The erection of machinery is completed, and has started working."

ST. JOHN DEL REY.—The following telegram has been received from Mr. Chalmers:—"Produce for the month of April, 31,000 oitavas, equal to 3574 ounces troy; value, £12,012; yield per ton 5·6 oitavas (·64 ounces troy). Borehole driven 300 feet; test satisfactory."

SUTHERLAND REEF.—The following cable is just to hand giving crushing result for the month of April:—"20 stamps ran 16 days 3 hours; crushed 1021 tons for 134 ounces." The mill was only ably to run during part of April, owing to want of water through breakdown of pump. From mail advices we understand that 10 stamps have been experimenting on ore from the new reef during the days run in April.

TOLIMA.—The following cablegram has been received from the acting superintendent:—"Estimated returns for April, £4000; estimated profit for April, £900."—P.S. In this return the silver is valued at 33d. per ounce.

SAN SALVADOR SPANISH IRON ORE. — The s.s. *Mandarin* sailed from Santander or the 4th inst. with a cargo of this company's ore for Glasgow.

TAMWORTH GOLD MINING COMPANY.—Telegram from Dr. Pratt, May 7:—"Started the machinery on May 5, but a few alterations are still needed. We have stamps running ore on dump. A trial crushing of 20 tons has yielded 40 ounces of gold."

THE JUMPERS.—Results for April: A cablegram has been received from the head office at Johannesburg stating the following results for last month:—"Crushed, 7337 tons; obtained from mill, 3164 ounces of gold; from concentrates, equal to 587 ounces of gold; from tailings by cyanide, 451 ounces of gold; total, 4202 ounces of gold. Profit for month, £3000. The mill ran 23 days."

TWIN LAKE PLACERS.—The manager reports the following results for April:—Cubic yards of gravel washed, 30,000; square yards of bedrock exposed, 4000; square yards of bedrock cleaned, 2400; estimated value of bullion produced, $1500.

UNITED IVY REEF.—A cablegram states that 690 tons were crushed during April, yielding 391 ounces. The tailings yielded 224 ounces, and concentrates 34 ounces, making a total of 649 ounces for the month. The stamps worked 17 days.

WAIHI SILVERTON EXTENDED.—The following cable has been received from the mine:—"The mill has been working day and night for 20 days, and has crushed 500 tons in that time. Assays average £4 5s. per ton. For the past six days mill crushed in that time 250 tons, extraction complete. Do not intend to clean up until May 16.

WAIHI GOLD.—Bullion return for 28 days ending May 2, £11,847 from 2850 tons.

WEMMER.—The result of work done during April is as follows:—6614 tons crushed, yielding 3695 ounces of gold, 28 days, and from cyanide plant 4875 tons treated, yielding 1198 ounces. Concentrates caught 160 tons, assaying 88 dwts. (4 ounces 8 dwts.)

WESTERN ANDES.—Advices from the mines dated March 18 by which it appears that the profit for February was £530. The weather continues very dry at the mines.

WEST KALGURLI.—The following cable has been received from the mining manager referring to lease No. 1991:—"Struck water No. 2 shaft—require tanks, new winding gear—heavy supply certain; reef splendid; heavily mineralised; shall drive another 10 feet."

WEST RAND DEVELOPMENT.—Mr. Andries Van Driel, the local director in the Transvaal, cables as follows:—"Development work is progressing steadily. Assays average 14 dwts. per ton of 2240 lbs. Reef quartz and sandstone conglomerate, similar formation to Witwatersrandt Main reef series. Copy of report Poole forwarded by mail of April 4. Prospects decidedly encouraging."

WORCESTER EXPLORATION AND GOLD. — The following cable has been received from South Africa:—"Have declared a dividend of 15 per cent., payable to all shareholders registered on May 2."

WORCESTER.—Last month's crushing yielded 2444 ounces of gold.

NORTH SMITHFIELD.—The manager, J. Dwyer, reports under date of March 18 as follows:—The shaft has been sunk 18 feet, total depth 118 feet. 28 feet has been timbered; total timbered 118 feet. The country is the same as last reported, viz., black rock and plumbago floors, heavily charged with mineral. In a previous report the manager states:—I have found a good formation reef 300 feet to the east of the shaft, which I believe to be the outcrop of the Smithfield reef. The half yearly meeting was held on Thursday, March 19, Mr. H. Willett presiding, when the balance sheet and usual reports were read and adopted. For the ensuing six months Messrs. H. Willett and A. Cowell were appointed local directors, and Messrs. B. O'Regan and R. W. Ellis, auditors.

OMEO GOLD MINES OF VICTORIA.—The following is from the mine manager's report:—I have extended drive on western reef south 9 feet, total 18 feet. Extended north drive on western reef 10 feet, total 145 feet from main tunnel. Gold improving in the drive south of the main tunnel. Expect to cut the rich shoot of stone worked on the surface any day. Main cross country tunnel extended 6 feet by contract, total 169 feet. Extended drive on the Lena reef 20 feet by contract, total 98 feet. Reef in face 2 feet wide, carrying fair gold; expect to cut the big shoot of stone in about 20 feet more. The new winze on the Lillie reef sunk 23 feet, total from surface 68 feet. There is a splendid body of stone in the bottom, 5 feet wide, with two well-defined walls; 3 feet on the hanging-wall side of the lode is hard mineralised stone, showing gold in the solid stone, and 2 feet on the footwall is very soft gossan stone, carrying very fair gold.

NEW ISSUE.

THE DUNLOP PNEUMATIC TYRE COMPANY (LIMITED).

This company, with a capital of £4,000,000, has been formed to acquire as a going concern the whole of the assets and undertakings known as (1) the Pneumatic Tyre Company Limited); also (2) the Clincher Patents (Bartlett's Nos. 11800/89, 16348/90, 16783/90), including the license under royalty granted under same to the Palmer Tyre (Limited); also (3) the Westwood Rim Patents, including all plant and machinery for manufacturing these rims, now in possession of the Cycle Components Manufacturing Company (Limited), together with the licenses under royalty granted under same to the Stafford Manufacturing Company (Limited), Barton and London, the Westwood Manufacturing Company (Limited). The business of the Pneumatic Tyre Company was established in 1889, and since the following year, up to April 25 last, the net profits earned amounted to the enormous sum of £1,000,954 8s. 9d. The Clincher Tyre Patents (Bartlett) have been purchased from the North British Rubber Company for a very large sum in cash, and a working arrangement has been made under which the North British Rubber Company will continue to manufacture pneumatic tyres (Bartlett's patent), but under a royalty upon each tyre, payable to the Dunlop Pneumatic Tyre Company (Limited). This arrangement, based upon the stated output of the North British Rubber Company for the current year, is expected to yield to the Dunlop Pneumatic Tyre Company (Limited) royalties amounting to £25,000 per annum. The purchase of the Clincher Patents includes the only license granted thereunder. This license has been granted to the Palmer Tyre Company (Limited), and provides for the payment of a royalty on each Tyre, but the minimum royalties must never fall below £3000 per annum, which will in future be payable to the Dunlop Pneumatic Tyre Company (Limited). If deemed advisable, the Dunlop Pneumatic Tyre Company (Limited) will issue a license under the Clincher Patents to a third company. The Dunlop Pneumatic Tyre Company (Limited) will, from September next, manufacture Westwood Rims. These patents have been acquired because the Pneumatic Tyre Company found the Westwood Rim to be far the most suitable type for combination with air tyres. The accountant of the Cycle Components Manufacturing Company (Limited) certifies that the profits upon contracts made for the current year by that company alone, in respect of Westwood Rims, will produce £22,000,

IRON AND STEEL INSTITUTE.

THE 27th annual general meeting of the members of the Iron and Steel Institute was held at the Institute of Civil Engineers, Great George-street, Westminster, on Thursday and Friday of this week. — In the absence of the President, Sir David Dale, through ill-health, the chair was occupied by Sir LOWTHIAN BELL.—The council, in their annual report, noted with pleasure that during the year 1895 the Institute had been attended with encouraging results. The number of members on the roll was 1555, there having been 93 names added to the register during the 12 months under review. The council had to congratulate several members of the Institute on the high distinction obtained by them—baronetcies had been conferred upon Sir David Dale and Sir William Thomas Lewis, and a knighthood upon Sir Acquis Martin. Dr. William Anderson had been appointed to be a Companion of the Order of the Bath, and other members had also been honoured by gaining various distinctions. After referring in terms of regret to the loss the institute had sustained by the death of 26 members, allusion was made to financial matters. The income amounted to £4159 7s. 5d., and the expenditure to £3088 6s. 7d., thus leaving a surplus £1071 0s. 10d. The report having been adopted, the Chairman, in complimentary terms, presented to Dr. Hermann Wedding, Professor at the Berlin School of Mines, the Bessemer Gold Medal for 1896, in recognition of the services he had rendered to the iron and steel industries by his valuable contributions to metallurgical literature.

We hope in the course of this and next week to publish fully some of the very valuable papers which were subsequently read and discussed.

THE ANNUAL DINNER.

The annual dinner was held on Thursday evening at the Freemason's Tavern.—The President of the Institute, Sir David Dale, was unable to be present, owing to indisposition; so the chair was filled by the Past President, Sir James Kitson, M.P.—In proposing the usual loyal toasts, the Chairman drew attention to the fact that the Prince of Wales is an honorary member of the Institute.—Mr. W. Whitwell proposed the toast, "The Houses of Parliament," to which Sir J. W. Pease, M.P., responded.—Sir Lowthian Bell proposed "Kindred Societies." Sir Benjamin Baker's name was coupled with the toast. He dwelt upon the common interests which bound together all the societies connected with the iron and steel institutions. Those societies were exceedingly powerful and influential. He saw no reason why all of them should not be gathered together in one building, as many societies associated with art were gathered at Burlington House. The iron trades societies were strong enough to make such a congregation of kindred societies possible and very successful, and he was of opinion it would be advantageous to all of them if they could bring it about. (Cheers.)—Sir W. Arrol also responded to the toast.—Professor Roberts-Austen proposed "Our Guests."—Sir Courtenay Boyle, who was the first to respond to the toast, said that one of the most pleasing characteristics of his official life was that it brought him into continual relation with the scientific institutions of the country. It was a personal gratification to him to know that those relations were always friendly. For 10 years he had been gratified to recognise the willingness and thoroughness with which the scientific institutions of this country placed their unrivalled knowledge and power at the disposal of those who, in a capacity however humble, had to administer the affairs of the nation. He assured them that in that co-operation he, for one, found the greatest possible safeguard to the welfare of the community. It was the duty of those who held administrative positions to utilise and get placed at the service of the State that scientific knowledge which societies like the Iron and Steel Institute could supply. (Cheers.)—Dr. Wedding, who also responded to the toast, speaking on behalf of his fellow-countrymen in Germany, spoke of the work of such institutions as tending to the maintenance of the peace of the world. (Cheers.)—Sir Alfred Hickman, in proposing the toast of the Institute, commented upon its cosmopolitan character.—Sir James Kitson, the President, on rising to respond, was greeted with hearty cheers. The 27 years during which that Institute had existed had been, he said, a most important period in the industrial history of the country. Speaking of the great production of the iron and steel factories of the country, he said we could only by the development of our own colonies hope to carry off the surplus products of our mills and blast furnaces.

HAMPTON PLAINS ESTATE, LIMITED.

A summary of the principal discoveries and developments.

IN circular No. 4 issued to shareholders in the Hampton Plains Estate (Limited) the directors report as follows:—The last circular (No. 3) was issued on October 16 last. At that time it was intended to close the books of the company on December 31, and to embody the information since received in the annual report and accounts made up to that date. As, however, important negotiations were then in hand, it was considered advisable to postpone closing the books till March 31, and it has consequently been determined to issue this circular to inform you of the progress made since issue of circular No. 3. The directors feel certain that shareholders will be both surprised and gratified at the amount of work which has been accomplished in little more than 12 months' actual working, and they again congratulate the shareholders upon possessing an estate which, day by day, is being proved more valuable. The accounts from Coolgardie cannot be received before the end of May, so that the general meeting cannot be held until July.

Sale of Blocks.—You have already been informed that the policy of the board was to sell off various outlying blocks. This course has been steadily pursued, and the following three blocks have been sold to sub-companies formed to work them on a commensurate scale, and under responsible managers:—

Name.	Acreage.	Total Capital.	Working Subs.	Capital. Res.	Manager.
		£	£	£	
Block 45...	27,562	225,000	50,000	—	T. Hollow.
Block 50...	8,000	200 000	25,000	25,000	E.H.Liveing.
Block 42...	13,480	150,000	15,000	25,000	J. M. Craze.

Contracts have also been made for the sale of the two following blocks, and companies have been registered to acquire:—

Name.	Acreage.	Total Capital.	Working Guaranteed.	Capital Reserved.
Block 32	21,180	£150,000	25,000	£25,000
Blocks 35, 37, 39...	7,420	120,000	20,000	—

Proposals have been made for the purchase of the following blocks, by responsible parties prepared to form companies to take them over in a similar manner to the three companies above named, and the legal formalities are now being proceeded with.

Name.	Acreage.	Total Capital.	Working Capital. Guaranteed.	Reserved.
Block 44 ...	5,120 ...	£105,000 ...	£20,000 ...	—
Block 36 ...	6,400 ...	105,000 ...	20,000 ...	—
Block 40 ...	7,680 ...	135,000 ...	20,000 ...	£15,000

It will be seen that the total additional capital provided by the above sales which will be available for prospecting and developing these blocks amounts, in all, to £285,000. This cannot but be an advantage to the parent company, which will hold a large interest in each of these sub-companies. In addition to the above sales a company has been formed, under the title of the Coolgardie Waterworks Company (Limited), with a working capital of £50,000, of which £30,000 has been subscribed, to acquire from the Hampton Plains Estate (Limited) certain rights for obtaining water from Lake Lefroy and from the deep borings and to supply the town and district of Coolgardie with water. The Hampton Plains Estate holds 85,000 shares out of a total issued capital of £180,000.

Gold Discoveries.—The directors are pleased to be able to inform the shareholders that, as the estate is more and more prospected, they continue to receive information as to the discovery of gold-bearing reefs, and the following is a summary of the principal discoveries and developments on each block.

Block 45.—Messrs. Bewick, Moreing, and Co., in their report, stated:—"This block is situated, there appears little doubt, on a continuation of Hannan's mineral belt." Mr. Moreing, at the statutory meeting of the company, stated that "Dr. Schweisser, a German mining engineer of great experience, went over Block 45. . . . He has cabled me that there are numerous reefs outcropping on the block. Of course, the outcrops of these reefs, as may be expected, are of low grade; still, he found gold on many of them; and he particularises one reef which has, he says, the appearance of being very valuable, and he recommends the vigorous exploration of that reef." Mr. Hollow, the manager selected for Block 45 Company, has recently arrived upon the property and taken charge, and he has cabled as follows:—"Been all over property; indications are favourable; a most promising property." Confirming this cablegram, under date March 17 last, he says that "he has received a very favourable impression of what he has seen of the block. The reefs are numerous and well defined, and he has started prospecting." By cablegram dated April 15 he announces that he "has struck gold," but gives no details.

Block 50.—Seven leases of 25 acres each have been pegged out by the West Australian Gold Fields (Limited) and also one water right of 25 acres. Two leases of 25 acres each have been pegged out by the London and West Australian Exploration Company (Limited.) Two leases of 25 acres each have been pegged out by the Hampton Plains Exploration Company (Limited.) Messrs. Bewick, Moreing, and Co., in their report dated February 26, 1896, state:—"More work has been done upon this block than upon any other, and it has also yielded most satisfactory results." Leases taken up by the West Australian Gold Fields (Limited):—No. 1 Lease. Shaft has been sunk to a depth of 50 feet, and drives have been made 50 feet and 52 feet north-north-west and north-north-east from the shaft. Throughout the drive coarse gold is visible in the stone. Various other work has been done all over the claim.—No. 2 lease. Shaft is 16 feet in depth, and a drive of 16 feet put in at the bottom of the shaft, where it cut a leader carrying very good looking stone. Water has been struck in the water shaft at 120 feet.—No. 3 lease. Shaft sunk 157 feet, and drives 96 feet north-north-west and 12 feet south-south-east.—No. 4 lease. Shaft sunk 99 feet, and block well costeened; in some of the pits fair looking reef exposed, containing fine gold disseminated through stone.—No. 5 lease. Shaft 60 feet deep, showing large body of stone all the way down.—No. 6 lease. Vertical shaft 70 feet deep, and considerable amount of costeening done.—No. 7 lease, Trench 125 feet long, exposing nice leader, which has been sunk on for 10 feet. On water right south of leases 5 and 6 a dam has been constructed holding 10,000 gallons. Leases of the London and Western Australian Exploration Company (Limited).—These have only recently been taken up, and little information is yet to hand. Lease of the Hampton Plains Exploration Company (Limited): Western Lease.—Shaft sunk 80 feet, 50 feet from the surface drive has been driven to the north. Crosscut has proved the reef 7 feet wide. South drive 68 feet. Crosscut proves reef 5 feet wide. Fine gold showing in stone. The whole of the outcrop has been trenched. The Eastern Lease.—Shaft 60 feet deep. Drive 15 feet to the south on large formation, containing quartz carrying small quantity of gold. Generally.—Large amount of prospecting work has been done outside the above areas. Near the 4-Mile peg is exposed a large body of stone, carrying, in some places, coarse gold. At another point a new find has been made; very nice colours and coarse gold visible in the stone. Reef about 4 feet wide. Gold has also been discovered north of No. 5 selection. Men are prospecting south-east corner of this block to trace the leader pegged out on Block 48 by the West Australian Gold Fields (Limited). A nugget weighing nearly 8 ounces has been picked up on this block, and is now in possession of the company. A 5 stamp mill and oil engine have been erected on lease No. 1, and crushing will commence in about a fortnight's time.

Block 42.—The following information is taken from a report by Mr. James M. Craze, M.E., the general manager of Block 42 Company:—"The property is situated a little east of south from the I.O.U. district, and there can be no doubt but that the same auriferous belt of country traversing the I.O.U. country will go into your Block 42. In passing over this block I was favourably impressed with the large amount of quartz and ironstone scattered all over the surface and with the many reefs which outcrop in every direction. The main reefs have a direction west of north, but there are a great many smaller ones running in all directions. About three miles west of this block, and near the prospector's old camp, there is a very large reef having a direction north 10° west. This has been prospected a little along the outcrop for over 500 yards. I consider this one of the finest-looking reefs I have seen in the colony. It is from 12 feet to 50 feet wide, and stands well out of the ground, in places forming a big blow. The quartz is beautifully laminated and is highly mineralised, containing iron oxide, iron pyrites, galena, and a little zinc blende. Payable stone has been met with on the 50 acre block that has been pegged near the eastern boundary line, and, as I am given to understand, belongs to the Hampton Gold Fields (Limited). I have a strong opinion that payable gold will yet be found on this block; also that water will be got at comparatively shallow depth—viz., at from 150 feet to 200 feet."

Block 32.—Messrs. Bewick, Moreing, and Co. report:—"In various places on this block ironstone lodes and quartz reefs crop up, and there are quantities of quartz float scattered about. The block appears to be worthy of a more lengthened trial by properly equipped men."

Block 36.—Messrs. Bewick, Moreing, and Co. report:—"Two reefs have been discovered, upon which two shafts have been sunk, one to a depth of 17 feet, the other 11 feet. Large amount of costeening has been done."

Blocks 35, 37, and 39. — Messrs. Bewick, Moreing, and Co. state:—"All present good conditions for the prospector, and outcrops of lodes and reefs occur in many places. A carefully equipped party, with a leader, should be sent to thoroughly prospect these blocks."

Block 40.—Messrs. Bewick, Moreing, and Co. state:—"One very large lode of ferruginous quartz outcrops near the north-west corner and can be traced from this point quite across the block, whilst running parallel to it are a series of smaller white reefs, all of which appear to be true lodes of very promising character. In conclusion, we may state that this block has not yet been prospected, but that we consider the north-west portion possesses a highly promising appearance, and should be carefully examined. There are many good sites for tanks. There is abundance of timber for all mining and building purposes."

Blocks 52, 53, 51, and 48.—These amount in all to about 120,640 acres, and the directors have decided not to dispose of them. In order that these blocks may be thoroughly prospected with as little delay as possible, and with the least possible expense to the company, the directors are endeavouring to make suitable arrangements for throwing these blocks open to approved prospectors on similar conditions to those on which Block 45 Company have thrown open their block. The company will retain an interest in any claims taken up by the prospectors, and it is believed that this system will be the means of thoroughly prospecting the property and proving the payable reefs which are believed to exist there.

Block 52.—The town of Hampton is situated on this block, and the diamond drill boring operations are also being conducted here. Messrs. Bewick, Moreing, and Co., state:—"In the north-west corner a shaft has been sunk 100 feet. Samples taken from a reef give fair returns. Crosscut will be made. Near the Seven Mile post discovered a reef which crossed the boundary; pegged out lease of 12 acres on Crown lands. Have started operations to test reef

both on lease and on your freehold. This line of reef shows gold for a length of 900 feet, at depths varying from 6 feet to 30 feet." Many of the proved mines in the Coolgardie district are within a stone's throw of the western boundary of this block.

Block 53.—Messrs. Bewick, Moreing, and Co. state:—"Considerable amount of prospecting has been done. Very good-looking stone found on surface, but no permanent reef yet opened up." The Chairman, at the statutory meeting of the Glenrock Consolidated (Limited) said:—"Whilst prospecting on Block 53 of the Hampton Plains Estates, Mr. Tinney reports that he discovered a strong lode of ironstone and quartz 2 miles to the north of the camp. The lode was 6 feet wide on surface, and traceable for ½ mile." The following information has been received by cablegram, dated May 4:—"Prospecting party have discovered reef, 3 feet wide, assaying 28 ounces to the ton, on Block 53. A reef of the same width is running parallel, carrying gold. Mr. Craze, the manager of Block 42, is inspecting."

Block 51.—Messrs. Bewick, Moreing, and Co. state:—"Presents generally a very promising appearance." Very little prospecting has been done.

Block 48.—Messrs. Bewick, Moreing, and Co. report:—"The West Australian Gold Fields have pegged out two 25 acre blocks here. Have been testing by trenches some likely-looking outcrops." Mr. H. P. Woodward (late Government geologist) and now partner in the firm of Bewick, Moreing, and Co., has recently examined this block, and on March 17 cabled: "Judging from appearances the ore is highly auriferous. There are a large number of reefs, mostly true fissure veins, but no prospecting has been done worth mentioning, and no important discovery has been made up to the present. There is plenty of timber on the block as well as water, the company's dam and condensing plant being thereon. An abundant supply of water can easily be obtained by sinking dams. The southern portion of the block is a promising property, and we strongly recommend that men should be set on prospecting." A prospecting party was immediately despatched, and on March 28 Mr. A. P. Matheson, the manager of the Hampton Plains Estates (Limited) cabled:—"Prospecting party have discovered splendid gold bearing reef on Block 48; stone showing splendid gold; reef 3 feet wide; outcrop traced long distance; less than mile from 10 Mile post on western boundary." Messrs. Bewick, Moreing, and Co., in their full report, just to hand, state:—"The geological features met with in this area are identical with those of our principal gold fields. There are three distinct classes of quartz veins, two of which appear to be true fissure lodes, the larger being blue and ferruginous, whilst the smaller are white. The Hampton Gold Fields have been at work on this block for a considerable period, and state they can obtain gold in small quantities anywhere, but have not yet made any startling discovery. It is, however, rumoured that this party know of some very good reefs. Splendid sites exists for dams. Timber is plentiful, whilst from a pastoral point of view this block cannot be surpassed for variety and quality of feed. In conclusion, this is an all-round excellent block, since it is auriferous from one end to the other." On April 11 Mr. Matheson cabled as follows:—"London and Western Australian Exploration Company have pegged out 50 acres on south portion of Block 48. Reef shows visible gold for 100 yards." The manager of the Hampton Gold Fields (Limited) (Captain J. M. Craze) cabled on April 16 last:—"Have pegged two 50 acres, Block 48. There are four veins on the property, three showing visible free gold. My report will be sent by to-day's mail."

Town of Hampton.—This is situated on Block 59. Leave has been granted by the Government to construct a tramway from Coolgardie to Hampton; but, by advice of the company's solicitors in Perth, the laying of the tramline has been delayed until the formal consent of Legislature in Council has been obtained. It is intended to continue this tramway through Coolgardie by arrangement with some of the leading citizens, to whom a concession for this purpose has been granted. A sale of town lots was held in March last, and resulted in the sale of 29 half-acre lots, at an average price of £36 each.

Water Conservation.—Messrs. Bewick, Moreing, and Co., and Mr. Coverdale, the water engineer, have reported fully under this head. The following is a summary of information received:—Existing wells and dams have been put into thorough repair, and tanks enlarged where necessary.—Cane Grass Flat (Block 59). 41 shafts, varying in depth from 6 feet to 48 feet, have been sunk, yielding approximately 64,000 gallons in 24 hours.—Cane Grass Tank, 2½ miles north of No. 4 bore. Holding capacity, 24,000 gallons.—Diamond drill. This was started 8½ miles south-east of Coolgardie on Cane Grass Flat. Work has proceeded almost continuously since July last. Bore sunk 240 feet. At 194 feet large body of water was struck, which rose within a few feet of the surface. Supply tested by continuous pumping for one week, and pump kept going its full capacity, 38,000 gallons per day. Bore tubed to 120 feet with 10 inch tubes, and at depth of 138 feet with 8 inch tubes.—Freshwater Well, north of Cane Grass Tank, 37 feet deep. Fresh water has been struck at a shallow depth.—Briggs' or White Well, 10 miles south-east of Homestead on Block 53, close to main road to Wollubar; depth 159 feet; yield 1500 gallons per hour. Second well being sunk down 135 feet. These two will be connected. Windmill pump is being erected. Wangie Tank, 18½ miles south-east from Homestead on main road to Wollubar store, has been put into thorough repair. Yallari Tank, on main road from Coolgardie to Dundas.—Holding capacity, 85,000 gallons. It is advisable to enlarge this, and put caretaker in charge, as water can always be sold at a large profit. Dundas Road Tank, situated on Block 59, about 12 miles south-east of Homestead, has been enlarged, and has now a capacity of 250,000 gallons. Goddard's or Wolhuter Tank has been put into order and condensers erected on the edge of Lake Lefroy. A Caird and Rayner condenser is now being erected.—Wollubar store. License has been granted for this, and it will be carried on as a hotel.—Dams and tanks. In addition to those above, dams and reservoirs have been made in various parts of the estate.—Rains. The following cablegram was received on April 3:—"Heavy rains during the past few days. George reservoir almost full. Estimated contents 2,000,000 gallons." Pipe line to Coolgardie.—Owing to supply of water in diamond bore, it has been considered advisable to instal a plant for pumping water to Coolgardie. Have accordingly had survey of line made, and find it will be a very simple matter. Note.—The diamond drill plant and the pipe line to Coolgardie have now been taken over by the Coolgardie Waterworks (Limited).

THE INSTITUTE OF CHARTERED ACCOUNTANTS.—The fifteenth annual general meeting of the Institute of Chartered Accountants was held on Wednesday, at the Hall of the Institute, Moorgate Place, E.C., Mr. C. Fitch Kemp (the President) in the chair.—The Chairman, in moving the adoption of the report, said the number of members had increased during the year by about 100. The Council had decided to introduce into Parliament, during the present session, a Bill for the amendment of the law relating to public accountants, and he hoped to put it on a satisfactory footing. A Bill, having for its object the amendment of the companies' law, which was brought into the House of Lords, had been referred to a Select Committee. The Council were of opinion that clauses could be inserted in that Bill which would have the effect of remedying some of those common and coarser frauds with which they were all familiar. They desired, however, to guard themselves against any of those drastic forms of legislation which aimed at guiding and taking care of everyone in the country. The sooner the duties of accountants were properly defined by the Legislature the better it would be for companies at large, and the purer would be the commercial atmosphere. Speaking on behalf of the Council, during the two years he had had the honour of occupying the chair, the relationship which existed between the Institute and the great official departments of the State had been put on an improved footing. He believed there was now a sincere desire on the part of the Board of Trade to recognise their order.—Mr. G. Walter Knox (Vice-President) seconded the motion, which was carried unanimously, and shortly afterwards the proceedings terminated.

HOTEL CECIL.—We understand that all rooms at the Hotel Cecil have already been engaged.

SAFETY APPLIANCES IN MINING.

By HARRY A. LEE, COMMISSIONER OF MINES.

BULLETIN NO. 1 OF THE COLORADO.

State Mining Bureau.

THE Bill establishing the Bureau of Mines, in accordance with the constitutional edict, provides that the officers of this department "shall inspect and determine the safety of devices and methods used in mining" * * * and "take necessary measures to make them safe." * * * "On receipt of notice * * * shall inquire into the cause of accidents." "Shall exercise sound discretion in the enforcement" of the act; shall give notice of any defect or practice found "to be dangerous," and order "the same to be remedied." It further provides a penalty for non-compliance with such orders, and imposes a mandatory duty—viz., "Any owner, agent, manager or lessee having charge or operating any metalliferous mine, whenever loss of life or serious accident shall occur connected with the workings of such mine, shall give notice immediately and report all facts thereof to the Commissioner of Mines." Believing that all mine operators desire to strictly comply with legal requirements; to avoid fatal accidents and throw every safeguard around their employees, the following recommendations are made, and an early compliance therewith expected:—

Explosives.

Explosives must be stored in magazine provided for that purpose alone. Said magazine to be placed far enough from working shaft, tunnel or incline to insure their remaining intact in event the whole stock exploded.

All explosives in excess of amount required for a shift's work must be kept in the magazine. Under no conditions will the storage of powder in underground workings where men are employed be permitted. Each mine must have a suitable device for thawing powder and keeping it in condition for use. The water or steam bath is the only absolutely safe device. By a water bath is meant the surrounding of the vessel containing the powder with another vessel containing water which can be kept at desired temperature. The thawing of powder with dry heat is unsafe. Dry heat, under the most favourable conditions, may exceed a temperature of safety. Miners should not be permitted to carry powder in their boot legs or elsewhere about their person. A suitable place or places should be provided for preparing charges. At these points there should be a box or cupboard for caps and fuse. This should be securely fastened and so arranged that the caps cannot be jarred out or anything fall into the caps. A cap-crimper should be attached to the side of the cupboard with a small chain.

Oils, Candles, &c.

The storage of oils, candles and other inflammable substances demands the erection of a house for that purpose, and at a safe distance from the main buildings. They must not be stored with the explosives. Their removal for use, like the explosives, should be only in such quantities as are necessary to meet the requirements of a day.

Fire Protection.

All plants using steam—and especially small ones, where boiler, engine, blacksmith shop and shaft are all under one roof—must have a hose and hose connexion to injector or feed pump, and keep same ready for instant use. The line of hose should be sufficient to reach the furthest point of the plant. As a rule the water supply in small plants is limited, and safety is largely dependent upon quick action. A few hand grenades hung about the plant in convenient places are great safeguards, and should be indulged in. Heating stoves placed in shaft houses should receive even more care in safety equipments than is common in dwelling houses.

Timbering.

Next to explosives, inadequate timbering causes more fatality than anything about a mine. The general inclination is the use of too frail and few timbers. No rule can be fixed for use of timber, the conditions must be met as they arise, and economy in timbering lies in doing well what is done. Strange as it may appear, taking districts as a whole, the best-timbered mines are the most inaccessible and above timber line, and the poorest timbered mines are those located in the woods. Temporary work which endangers life is criminal, and mine operators who supply their timbermen with material below the standard asked for assume very grave responsibilities.

Code of Signals.

1- Bell—Hoist (when not in motion).
1- Bell—Stop (when in motion).
1-1- Bell—Lower.
1-1-1--1 Bell—With care—Hoist (man on).
1-1-1--1-1 Bell—With care—Lower (man on).

Other signals to meet individual demands can be arranged, but the code in full must be plainly printed and placed in the engine room, at the collar of the shaft, and at each station or level, together with a notice and penalty for wrong or improper signals. Wrong or improper signals should be treated vigorously. An employee ascending upon one bell or descending upon two bells should be discharged. In mines working more than one level, signal gongs or speaking tubes should be placed from level to level. The danger of an employee signalling the engineer without first knowing the location of cage or bucket is apparent. Where more than one level is being operated, special signals from lower to higher levels should be established: when established, the stopping of an up-going cage or bucket should be abolished. To illustrate this point: A. signals to hoist from sixth to second level; as cage or bucket passes fourth level B. stops it. The engineer is at a loss to understand; before executing one he has received another order. Let this be repeated several times and he becomes nervous. A rattled engineer is a dangerous attachment. It should be borne in mind that one bell does not mean "hoist until stopped," but "hoist to surface." Down-going buckets, or cages, are always "slowed down" at each level, and can be stopped with impunity; but on up-trips no one knows what signal is being obeyed, and should not interfere.

The Bell Line.

The bell line should be so constructed that signals can be sounded clearly and easily from any station. This essential device is much neglected, and should receive more attention. A few iron shieve wheels or rollers, so placed that the line will stand clear of timbers, is often all that is required. At stations or levels where the line is used from both sides of the shaft, an attachment should be made so that reaching across the shaft for the line is unnecessary.

Hoisting and Lowering Men.

The hoisting or lowering of employees with a cage or bucket should be permitted or positively prohibited. If permitted, a notice must be posted near collar of shaft, stating the maximum number who may use cage or bucket at one time. This limit is not jeopardised when the men go "on shift," but, unless fixed, may be exceeded at the end of the day's work.

The handling of men with a bucket is very dangerous, and its use is discouraged by this department as much as possible. To issue an order stopping the use of the bucket for handling men would, at the present time, work a hardship in some districts upon both the miner and mine owner. But should the work of the bureau demonstrate the necessity, action will be taken and the practice stopped. It is to be hoped that the next Legislature will enact a law compelling all new enterprises to use a cage in shafts two hundred feet deep and over. A strict compliance with the section of this bulletin enttiled "Daily inspection," will be demanded of all mine operators hoisting and lowering employees.

(To be continued.)

COMPANY FINANCE.

Reports, Balance Sheets, Dividends, &c., of Mining and other Companies.

LYDENBURG MINING ESTATES (LIMITED).

The following notice has been sent to the shareholders:—Referring to my circular letter of the 17th ult., advising that both ordinary general meeting and a special general meeting of shareholders had been convened at Johannesburg for June 10, I am directed to inform you that a cablegram has been received from our head office there, stating that both these meetings have been postponed until July 8; and that, unless express instructions are received to the contrary, the proxies you may have already sent will be used at the postponed meetings. Should you not have forwarded your proxies, you will be good enough to send them to me with the least possible delay, as the Articles of Association require half of the issued capital to be represented at the special general meeting in order to form a quorum.—Yours obediently, A. Moir, London Secretary.

UNITED MINES, BULTFONTEIN (LIMITED).

The interim report of directors states that the company was formed in June last with a capital of £125,000, including £20,000 working capital and £20,000 reserve shares. In October last it was found that the working capital would be insufficient to meet the cost of the machinery, and at the same time to place the company on a sound footing, they therefore disposed of the reserve shares—10,000 shares at par, and 10,000 under option at 25s. per share (which option expires at the end of the current month). The erection of the machinery and plant, workshops, compound for natives, &c., was completed towards the end of last year, when washing operations were entered upon. Owing to various hindrances it took some few weeks to get into thorough working order, but from the commencement until present date a steady improvement has been maintained, and the number of loads of ground treated has risen from 4771 for the week ended 21st December to 18,837 loads for the week ended 28th March last. The managing director says that a further improvement may be looked for as the mine gets more fully opened up. From the 14th December to the 31st March last, 189,656 loads have been manipulated, yielding 23,419 carats of diamonds.

WAIHI CONSOLIDATED GOLD MINES.

The directors inform the shareholders that the transfer of the property acquired by the company has now been completed, and the mines are standing in the name of the company. The development work which has been commenced before the formation of the company is being vigorously pushed on under the supervision of the local committee with successful results. The work at present consists of a trial shaft, from which, at a depth of 75 feet, a drive has been run which has cut a gold-bearing lode 60 feet in width. On receipt of this information by cable, the board, accepting the strong recommendation of the local committee, authorised the sinking of a main shaft at once. Considering the short time during which the work has been carried on, and the shallow depth at which this discovery has been made, the directors feel justified in congratulating the shareholders on the possession of what is likely to prove a valuable property. The directors further announce that Sir Julius Vogel, K.C.M.G., formerly Premier of New Zealand, has joined the board. Share certificates in exchange for bankers' receipts are under issue.

HAMPTON GOLD FIELDS (LIMITED).

The discovery on block 53 of the Hampton Plains Estate of a reef 3 feet wide, assaying 28 ounces of gold per ton, and a second reef running parallel to it, showing gold freely, has been made by the prospecting party of Hampton Gold Fields (Limited) and Swan Syndicate (Limited), who are jointly interested in this important discovery. Mr. J. M. Craze (manager of Hampton Gold Fields, Limited) was expected to arrive on the property about May 5, and his report will be forwarded in due course.

THE AURIFEROUS PROPERTIES (LIMITED).

The following circular has been sent to the shareholders:—I am instructed by my directors to inform you that since the formation of the company they have acquired interests in what they believe to be several valuable properties, which should, when realised, show satisfactory results. The company have about one-third interest in the Horse Shoe Bend Gold Mine Development Company (Limited), who have 196 acres in the district of West Australia. On this property a considerable amount of gold has been taken from the alluvial, thus indicating the existence of extensive gold-bearing reefs, which is now being actively prospected, with the result that the mine manager has informed the board that he had discovered gold-bearing reef. Mr. Hugh Walker, the company's consulting engineer in West Australia, has been instructed to proceed to the property, to report on same. It is intended upon development to form subsidiary companies, which should prove a source of great profit to the shareholders. Your company have also acquired a very large interest in the Apollo (Black Reef) Gold Mine (Limited), situated in the Misgund District of the Transvaal. From reports made by eminent experts and the manager, the property is evidently one of great value, and from its situation and the character of the reef, the mine can evidently be worked at as low a minimum cost as any other in the Rand. The company also holds interest in various other properties in the several gold districts of West Australia, including Hannan's and the Murchison district.

— We are informed by the Secretary of the RANDFONTEIN ESTATES GOLD MINING COMPANY (LIMITED) that share certificates for transfers lodged for registration up to February 1 last, are now ready for delivery by the London agents, the Robinson South African Banking Company (Limited), 1, Bank-buildings, Lothbury, E.C.

— Share certificates for transfers lodged for registration in connection with the BLOCK B LANGLAAGTE ESTATE GOLD MINING COMPANY (LIMITED), up to April 30, are now ready for delivery by the London agents, the Robinson South African Banking Company (Limited), 1, Bank-buildings, Lothbury, E.C.

— The final batch of letters of allotment and regret in the CAVENDISH WATERPROOF ASBESTOS SOLE COMPANY (LIMITED) have been posted.

IN our summary of M. Rigaud's process a week or two ago, we stated that the paper was read before the Société des Ingénieurs Civils de France. The meeting, however, was held in the rooms of the society, and not, we understand before the society itself.

L. LePersonne and Co.,
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Good prices can be obtained for low produce Copper Ores. Send air samples of not less than half a pound.

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(MACARTHUR-FORREST PROCESS).
All information and terms regarding Plants and the Licensing of this Process can be obtained on application to:
THE AUSTRALIAN GOLD RECOVERY CO. (Ld.), 23, College Hill, London, E.C.
JAMES R. FOWLER, Esq., 14, King William Street Adelaide; or
GORDON WILSON, Esq., The Australian Gold Recovery Company (Limited), Charters Towers, North Queensland.
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RAILS.—Bridge, Flange, Double Head, and Bull Head, with or without fastenings.
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DIARY.

Monday, May 11.
Consolidated Trust, Winchester House, 12.
Mason and Barry, Cannon-street Hotel, 2.

Tuesday, May 12.
Cortez Mines, Cannon-street Hotel, 12.
South African Trust and Finance Company, Win. Ho., 12.
Joker (Yalgoo) Gold Mines, Winchester House, 2.
Zambesia Exploring Company, Winchester House, 2.30.

Wednesday, May 13.
Forbes Reef Gold Mining Company, Cannon-street Hotel, 2.
North British Australasian Company, Winchester House, 2.
Geldenhuis Estate and Gold Mining Company, Johannesburg.
Lydenburg Mining Estates (Limited), Johannesburg.

Friday, May 15.
Thames Hauraki Gold Fields, Winchester House, 12.
Alabama Coal, Iron, Land and Colonisation Co., Win. Ho., 12.
Western Explorers (Limited), Winchester House, 12.
Australian Broken Hill Consols, Winchester House, 12.
Anglo-French Gold Fields of Australasia, Cannon-st. Ho., 12.30

The Mining Journal,
RAILWAY AND COMMERCIAL GAZETTE:
An Illustrated Record of Mining, Metallurgical, Railway, Financial, Industrial, and Engineering Progress.

ESTABLISHED IN 1835.

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LONDON: MAY 9, 1896.

COMPANY HUMOURS.

THERE might be found in life less attractive and amusing pursuits than that of scrutinising the peculiar mental attitudes sometimes assumed by shareholders in regard to company matters. A glance at one or two may be taken; but for the adequate treatment of the subject the patient genius of a Mill and the comfortable proportions of an octavo would become necessary. What may be called the economical craze—not the judicious parsimony of a careful business mind, but economy run mad—sometimes assumes bizarre shapes. When a company is, as it is termed, in low water, and the directors have had hard work and, perhaps, considerable pecuniary sacrifice to keep the ship off the rocks, there will be a stormy agitation for the reduction of fees. A hundred or two pounds is, at pistol point, knocked off the directorial fees, the secretary is execrated for spending so much money upon cables, while the auditor, whose head has been swimming for weeks over the complexity of the company's accounts, has his remuneration reduced to 20 guineas, with a veiled threat that, in the event of his turning restive, the lucrative appointment will be transferred elsewhere. But what a difference when the sun of prosperity shines over the concern and warms the shareholders' hearts! A mine has exhibited unusual productive capacity, and dividends have been paid because there was hardly any way of avoiding doing so. The board files in before the annual meeting with a modest, deprecating smile, which seems to say that they heroically disclaim all credit for interfering with the course of Nature, and heightening, by some occult method—something in the Mother Shipton direction—the productive character of the mine. As the Chairman mouths the phrases in which the assays are given he seems to express that if the board had had other presidency than his the figure would only have been half as big. Then the shareholders pass a vote of thanks—embracing in its broad and philanthropic comprehensiveness the greater part of the human family—and go out and dine like just and meritorious men. Payment by results, whatever people may say to the contrary, is not a fair or just method of remuneration. Directors cannot influence the value of the company's property, and just as the most startling results may be achieved with no efforts upon their part, so months of hard work may be expended in the fruitless endeavour to make a silk purse out of a sow's ear.

A frequent attendant at mining meetings whom everybody cordially detests is the man who has been on the property, and who takes care that everybody in the room should become aware of the fact. "I am an old miner myself," he remarks, with a self-deprecatory smile, "and there is one thing I should like to say. It seems to me that the fence down by the stream which divides our property from the Jumping Frog Extended ought to be topped with barbed wire, so as to keep out the kangaroos." And the board, fervently wishing that the old miner was pursuing his avocation at the bottom of the Calumet and Hecla, cordially thank the "honourable proprietor" for his fruitful suggestions, and promise to bear them in mind—which they do, for ever afterwards cherishing a bitter animosity against their bald-headed interrogator. Another humorist is the bare-faced "bull," evidently thickly in with the promoting crowd, who gives the meeting a little disinterested information as to the extraordinary value of the property in question, remarking that with careful management the property in question "can hardly fail" to become a heavy dividend producer. And yet years go by, and the company still keeps persistently out of the dividend-paying list, the only saving possibility being that the dividends were so extraordinarily heavy that they sunk the ship chartered to bring them over the deep blue sea. If there is one fact which stands out clearly in connection with company procedure, it is the overwhelming preponderance of the Chairman's influence upon the tenour and upshot of a meeting. An able Chairman will, metaphorically speaking, twist the shareholders round his fingers, and bring them all to accept his view of the case. Before now we have seen a Chairman face with unruffled complacency and admirable resource a meeting, the majority of whom were bitterly opposed to the board's policy. Every objection he over-ruled with a cogency and force from which there was no appeal, and to which there seemed no answer. It was a glorious sight to see the opposition becoming more and more thoughtful, as if assailed by some glimmering doubt as to the justice of their position. But with the bull-dog tenacity of the Anglo-Saxon they adhered to an obstructive and irreconcilable tactic, voting solid against the report. The Chairman was, however, more than equal to the occasion. Glancing calmly out over the crowd of glowering shareholders, and reckoning the directors as voters, he proclaimed the numbers equal, and then carried the report by the exercise of the presidential privilege of the casting vote. The opposition were, so to speak, "sold," and looked at each other with vexation and dismay. "A board that will condescend to vote on their own policy," said a disappointed candidate for the directorate, "will stoop to anything." But the shareholders for the most part took their beating calmly, were lost in admiration of the presidential prowess, and seemed to join in some vague expression of the idea that the Chairman was worth his salary.

But what a reverse there is to the shield! How inextricably will a muddle-headed Chairman confuse the issues, and string out the proceedings like a Parliamentary sitting in the old days! How he will put resolutions that have not been seconded, count opposition by the stumbling inadequacy of his blundering rhetoric, and give the board away by sweeping the veil from before the Machiavellian astuteness of the directorial policy—all with a self-congratulatory simper that is hard to bear patiently in December, but which in the fierce glare of an August sun, with the thermometer at dizzy heights in the meeting room, reaches the very summit of unbearable irritation! An agenda that from the common sense point of view should be concluded in ten minutes will, under these circumstances, be strung out to inordinate length, occasioning general disgust and weariness, and a glance at the shareholders' faces would seem to justify the belief that liquidation of the involuntary type would be far preferable to the exasperating monotony and pointlessness of the Chairman's speeches. Sometimes a cyclonic whirlwind of indignation will burst from a long-suffering meeting, and play weirdly and fitfully around the head of some insufferable personification of boredom, filling the air with sound like the rushing of a mighty tempest, and dying away in the rafters like a St. Gothard echo. Generally the offender will—somewhat hastily—resume his seat, but there have been cases where some hardy individuals have kept on to the bitter end, utterly unmoved by the tempestuous hurricane, and blandly blinking upon the outraged proprietary as upon some friendly and sympathetic circle of fellow spirits. To the hardened attendant upon company procedure, there is something unspeakably refreshing about these little breaks in the ordinary monotony, and the lurid outbursts of satirical humour which sometimes fall athwart the heavy, formal atmosphere hanging about the average statutory meeting serve to keep the company's solicitor and the secretary from petrifying into a sort of stony impassiveness. Harsh though it would be fair to call sometimes

NEW HERIOT.

IN another leader we deal with the position and prospects of the Wemmer Company, and there demonstrate that, in the event of good fortune attending the company, a future of exceptional brilliance is awaiting it. The New Heriot and the Wemmer are wonderfully alike in many respects. Both have just experienced an exceptionally good year; both occupy a position of remarkable solidity; and the prospects of both are really magnificent. They have also enlarged their properties, and prolonged their lives by the acquisition of claims from other companies, and the price of both the shares stand at almost the same sum. Both, again, have paid exceptionally large dividends, and both are destined, under favourable conditions, to maintain them for many years to come. There is, likewise, very little difference in their ages, the Wemmer being formed in 1886, and the New Heriot the following year. Similarly to the Wemmer, too, the New Heriot has had its capital increased several times. In its early days the latter was greatly hampered by the deficiency of working capital, and success refused to reward the efforts of the management. Crushing was commenced in February, 1888, with a 10 stamp battery. The first crushing was of 340 tons, yielding 530 ounces of gold, which, however, has not been attained since. In October the capital was increased, and in December the battery also, the latter to 25 stamps. The total return for the first year's working was 4921 ounces from 7697 tons. At the end of 1889 the capital was again increased; this time to £75,000. But success was as far off as ever, and at the end of January of the following year, crushing was suspended in order to further develop the mine. In the same year the company was reconstructed, the capital of the new company being £85,000. A 40 stamp battery, with cyanide and other plant, was put up, and the 10 stamp mill restarted. In September, 1893, the new mill commenced operations. In the following year, 1894, the battery was increased to 60 stamps, and in December the capital was raised to £90,000. In August of last year it was further increased to £115,000 for the purpose of purchasing the 16 claims of the Ruby property. A further 10 stamps are now being erected, which will bring the milling capacity up to 70 stamps. Of the 16 claims of the Ruby block, eight are on the dip of the western section of the Heriot, and the other eight are adjacent to the western boundary in a block three claims deep. Practically the whole of this area is reef-bearing, although it is stated that the ground adjoining the Henry Nourse is somewhat broken. In the eastern section of the Heriot the reefs worked are three in number—viz., the Main reef, South reef No. 1, and South reef No. 2. The Main reef has an average workable width of 4 feet. Separated from this by an interval of 9 to 50 feet of quartzite is South reef No. 1, and from 2 to 9 feet beyond this is South reef No. 2. In the centre portion of the property the Main reef, wherever intersected, has assayed poorly, and in the western section adjoining the Ruby very little development has been done. In the drive, however, which has been extended on the first level to the Ruby boundary, the reef, which may be provisionally regarded as the Main reef, has been exposed, and must, therefore, be regarded as continuing into the Ruby property, the dip of the reef being 80°. The average working width of the Main reef in the second, third, and fourth levels is 4 feet, and the two South reefs have each a working width throughout of 2 feet. Over these widths the ore at present developed shows by assay the following average values:—Main reef, 4 feet, 13½ dwts.; No. 1 South, 2 feet, 16 dwts.; No. 2 South, 2 feet, 45 dwts. At the beginning of the present year, according to the *South African Mining Journal*, the mine, on the three reefs, was opened, as regards reserve tonnage as follows:—

	Main Reef. Tons.	No. 1 South. Tons.	No. 2 South. Tons.	Total.
1st level ..	12,339 ..	11,992 ..	2,046 ..	26,377
2nd „ ..	14,012 ..	18,057 ..	6,307 ..	38,376
3rd „ ..	12,991 ..	20,307 ..	15,992 ..	49,290
4th „ ..	12,385 ..	19,673 ..	18,531 ..	50,589
	51,727 ..	70,029 ..	42,876 ..	164,632

The ore broken in the stopes, and dumped at surface, brings the total to about 170,000 tons. At the beginning of 1895 the reserve tonnage developed ahead of the mill was 120,000, so that it has been increased during the year by no less than 50,000 tons. The average working width of the reefs is thus 6 feet, and the assay value over 22 dwts. From these figures it will be seen that the future of the company is exceedingly bright, and that the profits and dividends for the current year are likely to exceed those for 1895, large as these were, amounting to 125 per cent. Various estimates have been made as to the life of the mine, which has been extended many years by the acquisition of the additional claims. Some authorities put it at 16, others at 19, whilst some go as high as 21 years. It will be a safe estimate to put the minimum at between 18 and 20 years, with the probability of a longer life. Therefore, considering the prospects of the mine and its probable life, the shares cannot be said to stand at their true value, but that here is ample margin for a rise.

WEMMER PROSPECTS.

INVESTORS have long learnt to regard Wemmers with an envious eye, and have always displayed an eagerness, when the shares happened to go down, from some cause or another, to a reasonable figure, to pick them up, either for the dividends which are bound to be declared, or else for the rise which would inevitably take place. But these opportunities are exceedingly rare, for Wemmer is such a favourite that the shares rarely fall below their intrinsic value, and they frequently exceed it. In the latter case, however magnificent the prospects, however solid and substantial the position, it would be, of course, unwise to purchase shares for any benefit to accrue to the holder of them. The smallness of the capital, the richness of the mine, the excellent management, and the rigid economy practised, have enabled enormous dividends to be paid, and 100 per cent. or 150 per cent. would be regarded as retrogression, and would create dissatisfaction and discouragement. Dividends, therefore, of 200 per cent. are looked upon as a certainty and as a minimum. The great drawback, of late, to the company's brilliant prospects was the comparatively short life of the mine and, therefore, no matter how large the dividends might be, they could not be expected to continue for a lengthy term of years. But an arrangement has now been arrived at, as everyone knows, whereby the life of the mine is greatly prolonged. A few weeks ago the announcement was made that an arrangement had been come to between this company and the Village Main Reef, whereby the Wemmer was to purchase from the latter 11¼ claims for 25,000 shares. Wemmers then stood at £10, and, therefore, the shares represented a sum of £250,000. At the time this was considered a very large sum, and it undoubtedly was, but the privilege was worth paying for, and, after all, the advantage for both companies is likely to be equalised. As a matter of fact, a much larger sum was, in the first instance, asked for, but after a considerable amount of negotiation, it was brought down to the sum mentioned, and as this was the lowest which would be accepted, there was no alternative but to close the bargain.

Although by the acquisition of this property the life has been prolonged, its value is, of course, uncertain. We know, however, that the reefs in the Village Main Reef are faulted, and that this circumstance has caused a great deal of anxiety and trouble to the Village Company, and has been the main cause of its comparative lack of success. This fact will, therefore, to some extent disparage the value of the acquired claims. As usual, the operations of the past year have been attended with brilliant success. Good fortune has all along attended the company, for hardly any loss was suffered during the political troubles which occurred at the end of 1895, during which period work in the mine was undisturbed. Dividends amounting to 200 per cent. have been paid during the year ending February 29, whilst a further 50 per cent. was declared at the end of March, so that with the 13 months ending the latter month the company has earned and declared 250 per cent. profit, thus demonstrating that the past year was the most successful and profitable in the company's career. But this was without taking into account a further profit in regard to development. There has been a further increase of ore developed from 85,575 tons of clean ore to 128,130 tons. In the profit and loss account this item is taken credit for at £18,973 9s. 9d., whilst at the rate of redemption of 7s. per ton crushed, this item represents £44,845 10s., or a surplus of £25,872 0s. 3d. During the year the mine not only fully maintained its value, but the lower levels show an improvement also as regards the Main reef leader. Although the yield from the mill fell to 11·76 dwts. per ton, and the total recovery to 18·443 dwts., the fact must not be overlooked that the ore milled was made up of 69·85 per cent. of South reef, and 30·15 per cent. of Main reef leader, which is the poorer reef. In the preceding half-year the proportions were 79·55 per cent., and 20·45 per cent. Further, the percentage of waste rock sorted out has also decreased from 37·65 per cent. to 33 per cent. Thus the prospects for the current year are as brilliant as ever. Of course, the dividends will be paid on an increased capital, consequent upon the purchase of the claims from the Village Company. But, in spite of that, we think dividends of 200 per cent. will be maintained, for if fortune still attends the company, the profits are likely to show an improvement over the past year. The shares now stand in the neighbourhood of 9½, which in the Autumn was an inflated price considering the short life of the mine. It is difficult, in the midst of the uncertainty as to what is contained in the new ground, to estimate the intrinsic value of the shares. Until evidence is forthcoming to dispel this uncertainty, we would advise investors not to purchase them at too dear a price. At the present price there is good margin for a rise, though, of course, market operations are not absolutely dependent upon the intrinsic value of a property, other outside considerations being allowed to affect prices. The general manager estimates the ore development will keep the 50 stamps at work for 18 months. At the annual meeting in Johannesburg a great deal of rancour was displayed in the attempt to nominate fresh directors for the vacancies on the board. Mr. GOCH, the Chairman, took deep offence at the proposal to infuse new blood into the directorate, and threw out incriminations right and left against the authors of it. We are sorry that he did not accept the suggestions in a better spirit, for we think it would have been more creditable to himself and to the company. We have no wish to dwell upon this unfortunate business, but pass over it in comparaitve silence. The meeting was adjourned, owing to the imprudent action of the Chairman in demanding polls, thus prolonging the strife which should have had but a short existence.

NOTES AND COMMENTS.

THE general prediction of a severe slump in Chartered remains unrealised up to the present, and there is reason to expect that it may have to be added to the vast masses of unjustified prophecy already accumulated in connection with the Stock Exchange. Perhaps the reason is that the Stock Exchange holiday, which occurred immediately after the cypher telegrams were published, gave time for reflection, and afforded the investors an opportunity to temper sentimentalism with reason. After all, the prospective value of Charterland's material prospects remains generally unaffected by the ever-shifting incidents in the political outlook. The view which we expressed last week, and which seems to have met with general acceptance—that the Chartered Company are not necessarily implicated, in their corporate capacity, in any of the recent political events in the Transvaal—has apparently come home with a fuller meaning to people interested in South African shares, and a strong disposition to resent the downward tendency has manifested itself. Even in the event of Mr. Cecil Rhodes' resignation, the company's affairs would, undoubtedly, be carried on as usual, while the late Cape Premier might confidently be relied upon to exert all his influence in the support of a company in which he holds so substantial an interest, and with which he has been so long, and, on the whole, so pleasantly, connected. Above all, dealers appear now to recognise that the conditions affecting the Chartered Company's outlook are peculiar to that concern, and, consequently, Chartered quotations no longer rule the market. Despite the unfortunate character of the general political conditions affecting South Africa, the leading shares in that department appear to maintain their strength in a remarkable manner. The Rand mining industry rests, in fact, upon too broad a basis to be prejudicially affected by anything but the gravest influences.

THE sudden death of Colonel North came as an especial surprise to the City of London. His figure was so familiar a one in company circles, and his energy in the discharge of business so marked, that many will find it difficult to conceive of his connection with limited liability enterprise as finally and completely sundered. There is no occasion to dwell upon the Colonel's personal characteristics—though in more ways than one he was a man of strongly marked individuality—but his connection with company affairs was so close, and the measure of control that circumstances and his own initiative put into his hands was so gigantic, that it is not easy to refrain from speculating upon the effects that will be occasioned by his sudden death. To the nitrate industry, of which he was generally known as the king, his death will be a great loss. It would, perhaps, be hardly too much to say that he was the creator of the Chilian nitrate fields, as a sphere of commercial enterprise, while down to the last his faith in nitrate of soda as a remunerative product continued unabated. Indeed, his faith in this particular is generally believed to have been attested in the strongest possible way—by the diversion thither of the greater part of his colossal fortune. His strong feeling in the matter was largely justified by the fact that the beginnings of his own extraordinary financial prosperity had the same origin. As yet it is too early to speak with confidence as to the precise effect of the blank in the nitrate world, created by his unexpected death, but it is safe to say that they will be both considerable and far-reaching. His connection with the boards of the different companies, by itself, is sufficient to ensure this. It has been charged against Colonel North that his bearing in relation to the companies of which he was elected a director was somewhat dictatorial. Taking the generality of company chairmen, however, it could hardly be said that his attitude was in this respect markedly exceptional, and it could at least be defended on the ground that his shrewdness, enterprise, and foresight fitted him to undertake a large share in company management.

A WEEK or two ago, on the arrival of Mr. Pritchard-Morgan in England, after his tour in Australia, we announced that he had been successful in obtaining from the South Australian Government a concession of 5000 square miles in the Northern territory of this colony. This week we are able to publish our correspondent's opinion of the value of this concession, which will be found in our "South Australian Letter." It will be noted that he thinks very highly of it, and that being so, Mr. Pritchard-Morgan is a very fortunate individual, and is to be congratulated. Our correspondent says:—"Many persons who know the country hold the opinion that when fairly exploited it will prove as rich in gold as West Australia. Indeed, since Mr. Morgan was in Adelaide news has come down of a new discovery at Wandie—a reef from which gold at the rate of 50 ounces to the ton of stone has been got. Much of the land secured by Mr. Morgan is the pick of the country, both for grazing and for cultivation, abounding in buffaloes in some parts, and capable of growing tropical productions as sugar, rice, probably also tea, indigo, and many other things. If Mr. Morgan succeeds, as I sincerely hope he will, in forming a company with a sufficient capital to develop this great country, I believe it will prove as profitable an investment as anything that has been offered in Australia, the gold mines of West Australia not excepted. And here there is no fear of such complications as have arisen in the Transvaal or in Venezuela. The climate is certainly tropical, but coloured labour can be procured, and Europeans, if they avoid drink, can generally stand the climate by taking due precautions. I have always maintained that our northern territory is one of the most valuable portions of the province, and I sincerely hope that Mr. Pritchard-Morgan's enterprise may result in proving my opinion to be correct." As those of our readers who follow the parliamentary intelligence will have seen Mr. Pritchard Morgan has not forgotten his earliest, and, perhaps, his more patriotic love. That he is keenly alive to the possibilities of Welsh mining, and to the necessity of placing beyond doubt at the earliest possible period the gold-bearing capacities of the Principality, is shown by the questions he addressed a few days ago to the Chancellor of the Exchequer on mining operations on the Crown lands in Wales. It is to be regretted that the right honourable gentleman's replies were not so satisfactory as could have been desired.

THE full and interesting account which Mr. Pritchard Morgan recently gave to the shareholders in the London and Westralian Mines of his visit to West Australia, and his tour of inspection through the various gold fields in that colony, will be conceded by those who read the report published to-day in our columns, to be a valuable addition to the information available on the subject. There seems every reason to believe that Mr. Pritchard-Morgan made the very best use of the time he was able to spend in the colony. Indeed, there is matter for surprise in the magnitude of affairs

which the well-known advocate of the home mining industry contrived to fit into a comparatively short space of time. All the chief gold fields were visited and inspected with more or less closeness of scrutiny. In its commercial aspect the tour appears to have been highly satisfactory, since it has resulted in the acquisition by the company of some very valuable options over a variety of promising properties. Mr. Pritchard-Morgan appears to have been able to establish a close touch with mining men all through the West Australian gold fields, and to have arranged so as to be in possession of news respecting fresh discoveries at the earliest possible time. Shareholders in the companies with which Mr. Pritchard-Morgan is connected will be glad to note that, in the furthering of their interests in Australia, enterprise has been tempered with caution, and that whereas options likely to prove valuable have been acquired in considerable numbers, the amount of money actually hazarded upon properties as yet improved has been very limited. The speech, however, to which we have been referring will be found to be highly interesting, not only within the narrow circle of a few companies, but to all connected with and interested—even to a small degree—in West Australia, since it contains an account of the manner in which this now celebrated gold field presents itself to a man of mining experience and insight.

THE meeting of the week has been the annual meeting of the Great Boulder Proprietary Gold Mines, at which statements were delivered of a nature which excited the liveliest enthusiasm. The success of the first year's operations of this company has been almost phenomenal, for it has been gained against obstacles of a most colossal kind, such as mostly exist in the opening up of new countries. The chief of these obstacles were the difficulty of transport, the scarcity of water, and the lack of labour. The first is being removed by the building of a railway; the second still exists, though in not so acute a form; whilst the third has long been remedied and forgotten. Therefore, now that better conditions prevail, it requires no foresight to predict that the current year will, in all likelihood, show a great improvement upon the past 12 months. For instance, the working costs will be greatly reduced, and will, of course, go to swell the profits. Indeed, the immediate prospects of the company are magnificent. The developments and measurements in the lower levels give £1,000,000 of payable ore in sight. As Mr. Edgar Taylor pointed out, the great strength of the vein, and the fact that its continuity has already been proved in the 100 feet level for a distance of over 800 feet in length, strongly indicates a reef of permanent character. Another most encouraging feature is the recent striking of the rich ore in the 200 feet level, the deepest level in the mine. We would advise our readers to read and study the full report of the meeting which we give elsewhere, and we think that those who refrained from purchasing shares when they stood at a lower figure will be inclined to regret that they did not seize the opportunity. Mr. Zebina Lane, the company's superintending engineer, was present at the meeting and delivered the principle speech.

THE Melville Water Park Estate (Limited), which held its statutory meeting last Tuesday, is not a mining company, although it possesses a property in Western Australia, and has for its Chairman an eminent mining engineer—Mr. C. Algernon Moreing. Nevertheless, its prospects are far brighter than a great number of mining concerns, even including those which possess mines in the rich Coolgardie district of the colony. The company has been formed for the purpose of acquiring four blocks of land holding a commanding position on the Swan River, facing the City of Perth, and possessing several miles of river frontage. The directors intend to allocate one portion to residential purposes, another portion to commercial and manufacturing purposes, with the necessary pier and wharfage, and buildings and workmen's dwellings, and a third portion for agricultural and horticultural purposes, for which its fertility seems to render it very suitable. The property has been secured on the most advantageous terms for the company, and considering its almost unlimited possibilities, the directors have much reason to look forward to a successful and prosperous career. Of course, it is a property which will greatly enhance in value as the colony of Western Australia progresses, and its prosperity will be ensured with the prosperity of the mining industry, upon which the colony now mainly depends. It may be added that the whole of the capital was privately subscribed by the directors of the company, the leading West Australian Trust companies, and their friends. The total area of the property is 4548 acres, and as the price paid for it was £50,000 in cash, it works out to the reasonable sum of £11 per acre. The value of the property will be considerably enhanced by the building of a railway from Fremantle and South Perth, which, in all probability, will be built by the Government, in compliance with the wishes of the inhabitants.

THOSE who are interested in solving the highly-important question of the auriferous value of Rhodesia—and the way in which shares in properties situated in that quarter of the globe, have been taken up in London warrants the assumption that the class is a large one—might well be advised to follow the articles on the subject which are now coming from the pen of Mr. A. H. Halder, and which certainly carry the matter a step or two nearer solution. One thing seems sufficiently certain to be beyond the pale of useful discussion. The Rhodesian territories would seem to be undoubtedly auriferous in character. "Rhodesia," says Mr. Halder, "is one of the few countries in the world which has spread over the whole of its area in large quantities numerous and extensive auriferous veins, stringers, and leaders, some of which are undoubtedly promising." It does not, of course, follow from this that the gold-bearing character of the country upon a commercial scale is assured, for extensive veins do not always portend great richness. But there is at least a great incentive to a vigorous exploitation of the country, such as will shortly settle the question for all time. For the most part, the Rhodesian formations are apparently in stratified form, excepting in cases where the normal stratification has been broken by the intrusion of dykes, in which case there is considerable difficulty, even for the practised geologist, in tracing the vein. The main point as to the auriferous character of Rhodesia having been settled, there is every encouragement to proceed to the systematic attacking of the most promising portions of these territories, so that their broad industrial workableness may be tested.

WHEN all the facts which were put before the proprietors of Ottos Kopje Diamond Mines, at the somewhat lively meeting held on Tuesday, are very carefully considered from different points of view, it is obviously clear that in approving of the scheme recommended by the directors, whereby the property of the company is to be leased to a developing company, the greatest discretion was shown. As we pointed out in these columns last week, the shareholders had practically no choice in the matter—that is, if they desired to still retain their interest in the property. Besides them, the holders of the debenture stock had to be remembered, and these gentlemen had already intimated their resolve that, in the event of the ordinary shareholders refusing to support the scheme, they would step in and work the property solely for their own benefit. Needless to say, the legality of such a proceeding had previously been ascertained. That the directors should have met with such severe opposition was only natural, but, nevertheless, it cannot be said that all the adverse criticism levelled at them on Tuesday was by any means merited. In addition to repairing and altering the machinery in accordance with the suggestion of that eminent engineer, Mr. Thomas Rickard, the directors of the new company will devote their attention to the developing of the blue ground, the value of which, it has been estimated, is very rich. The future operations of the Ottos Kopje Company will, in view of the complications at present involved, be watched with no small amount of interest.

A SPECIAL committee of the Wolverhampton Chamber of Commerce has just prepared a report with regard to the rates of freight charged by German and United States lines to South Africa as compared with those charged by English lines. The committee give particulars as to the lines loading at London, Liverpool, Glasgow, Hamburg, and New York, with their rates of freight for hardware and iron to the principal South African ports. All the English lines are stated to be formed into a ring, who fix and control the rates, which are practically the same by all the lines. The "ring" have also an agreement with the German East African Steamship Company, under which the rates quoted at Hamburg are the same as are quoted from English ports. The German Company, however, in union with the German railways, practically evade the fulfilment of their compact, giving through rates of freight from German inland towns to South African ports, and even to Johannesburg and Pretoria. These rates, compared with through rates from Wolverhampton, *via* Liverpool, show an advantage to Delagoa Bay of 19s. 7d. per ton from Remscheid, and 21s. 6d. from Berlin, over Wolverhampton. The German rates are pointed tariff rates, and the committee finds that rates considerably lower may be obtained for special parcels of goods. Although the committee cannot prove the fact, it is believed that the Netherlands South African Railway give reduced rates of carriage from Delagoa Bay to Johannesburg and Pretoria on goods arriving by the German Company.

THE shipping ring contend that in the through rates from inland German towns the concession is made entirely by the railway companies, and that the German Steamship Company maintain their tariff rate of freight from Hamburg, but the committee are of opinion that this contention cannot be sustained, and that beyond doubt not only the railway companies but the German East Africa Steamship Company itself give considerable concessions from their tariff rates. It is also noted that all the English lines send direct to the Cape, whereas the German line takes the longer route *via* the Suez Canal, and has to pay the canal dues. The committee find great difficulty in ascertaining how far manufacturers in the Wolverhampton district are injured by these advantages possessed by German manufacturers, and the difficulty is incurred by the almost entire absence of reliable statistics of shipments from Germany. Statistics of shipments to the Transvaal are not favourable. Shipments are made *via* Cape Town, Port Elizabeth, East London, Durban, but chiefly *via* Delagoa Bay; and it appears that the Portuguese authorities do not trouble themselves with statistics. The committee, however, is composed of gentlemen, each of whom has made at least one visit to South Africa, and they are unanimously of opinion that English manufacturers are seriously handicapped by the low rates of transport enjoyed by their competitors in inland German towns. Not only are orders being diverted from this country to Germany, but the fact serves as an argument for beating down the price of English goods. German competition is felt most at Delagoa Bay, and north of that port, to which ports English rates of freight are practically prohibitory. For example, the rate of freight for hardware from Wolverhampton to Tanga (German East Africa) is 75s., and the rate from Remscheid (the Wolverhampton of Germany), 43s. 4d. The rates make it an advantage for English manufacturers to send their goods to such ports *vid* Hamburg.

THE completion of the railway from Beira to Buluwayo, and the development of the gold fields of Rhodesia may cause an immense expansion of the already rapidly swelling trade in this district; but it is to be feared that the manufacturers of Germany will reap the principal benefit, the rate of freight from German manufacturing districts to Beira, the port of Rhodesia, for hardware, being 43s. 4d. against 75s. from Wolverhampton to Beira. "Ring" rates for Cape Town and Natal are maintained. Rates to Port Elizabeth vary according to the action of a syndicate of Port Elizabeth merchants, who load in London a sailing ship about every three months. When this syndicate are loading, the ring rates are reduced from 2s. 6d. to 7s. 6d., returning to normal rates 12s. 6d. to 17s. 7d. when the ship has sailed. The action of the syndicate has demonstrated that ships can be profitably loaded at rates considerably under those charged by the ring. American shipments to South Africa have more than doubled during the last five years.

RATHER more than a year ago we called attention in our columns to the dreadful barbarities which are undoubtedly perpetrated in the Sicilian sulphur mines upon the boys who are employed to carry the ore on their backs through the long, dark galleries. A journalist writing to the New York *Evening Post* from Palermo has lately given a terribly realistic picture of the sufferings which are endured by these poor deformed little wretches, who spend the best years of their lives buried in the foetid recesses of the sulphur mines. From the accounts written of what goes on underground it would appear that the employers perpetuate what is a very close parallel of slave keeping. They pay, it is said, from £2 to £12 for these lads, who remain with them very often until death, or until they are wanted by the Government for service in the army. Their experience of life must be horrible in the extreme. They are described by an eye-witness as being "stark naked, humpbacked, with twisted legs and faces, prematurely old," and it is even said that there have been cases when these hapless boys have been beaten to death for their inability to cope with the severe labour conditions imposed upon them. "In my career as a journalist," says Signor Ross, "I have seen men shot, hanged, lynched, and massacred; but I have never seen anything which affected me like this." It cannot, of course, be from ignorance that the Italian Government permits these iniquities to go on, for they have been bruited abroad persistently enough to attract their attention. It is difficult, then, to escape the conclusion that it is from indifference that they permit them, and until some unmistakeable popular manifestation shows that the thing is not to be tolerated any more.

ALTHOUGH the Board of Trade Returns for the month of April show a substantial advance over the corresponding month of last year, nevertheless they are quite up to the level of the preceding months of this year. They may be regarded, however, as satisfactory and encouraging, and as evidencing that the improvement has not come to an end. The imports for the month amount to £35 808,800, as against £34,341,388 in the corresponding month of last year, thus showing an increase of £1,467,442, or 4·2 per cent. For the four months of the year the value of the imports was £148,104,142 as compared with £135,154,830, or an increase of £12,949,312, or 9·8 per cent. Under all the heads considerable increases are shown, including 17 per cent. in the metals, and the same for raw materials for sundry manufactures. The total value of the exports for the month is declared at £18,426,699, against £17,252,311 for the corresponding month last year, showing an increase of £1,174,388 or 6·8 per cent. Increases are shown in many of the departments, such as 21 per cent. for metals, 7·6 per cent. in machinery and mill work, and nearly 6 per cent. in chemicals. For the four months there is an increase of 27 per cent. in metals, 17 per cent. in machinery and mill work, and over 13 per cent. in chemicals. The total export of iron and steel during the month was 289,333 tons compared with 225,459 tons during the same month last year. The value represented was £1,967,985 against £4,506,329, an improvement of 30 per cent., whilst for the four months the improvement amounts to 34 per cent. in quantity, and 28 per cent. in money value.

CARDIFF has been under the influence of the exhibition mania, and has come well out of the ordeal. So far as there are yet opportunities of seeing the "show" which was inaugurated with so much ceremony on Saturday last is a worthy representation of the arts and industries more particularly associated with the Principality. The fine art sections are at once worthy of Welsh traditions and modern promise, the industries are widely exhibited and worthily housed, while all the minor attractions which give the stamp of pleasure and novelty to an affair of the kind are present in abundant degree. As might naturally have been anticipated, the chief spaces in the mineral section are occupied by colliery exhibits, which are present in quite an imposing array. Among the 40 exhibits in this department are the leading firms of colliery owners in Wales, who are for the most part symbolically represented by huge blocks of coal, pointing the capacities of the mines in question. One block, for instance, forwarded by Powell's Tillery Steam Coal Company (Limited) weighed the not inconsiderable figure of 5½ tons. The extraction and raising of this "cobble" was made exceptionally difficult by the circumstance that it was situated some ¾ mile from the pit's bottom Manufacturers of wire ropes, picks, and explosives participated to a large extent in the exhibition, and several very good private mineralogical collections were kindly loaned. Mention might also be made of a specimen of the diamond matrix from the De Beers Mines, and a good set of West Country mining specimens, sent by the Cornish Institute of Engineers.

RUMOURED AMALGAMATION OF COLLIERIES.

There has been a rumour within the last week, which, though hitherto unconfirmed, seems to have some substantial basis, to the effect that a very powerful combination is being formed with the object of purchasing a large number of collieries in Durham, and amalgamating them into one big undertaking. It is rumoured that one of the largest owners in the country is selling out all his interests to the new company, which is to be one of exceptional magnitude, even in a country in which large colliery ownerships are the rule, and not the exception.

THE MINING MARKET.

FRIDAY EVENING.

The Kaffir Market apathetic, in spite of sensational movements in politics.—West Australians fairly active.

HISTORY repeated itself in the condition of the Mining Market on the resumption of business on Saturday morning, after the day's holiday, during which such momentous facts were brought to light. As was the case after New Year's Day, dealers and speculators had had ample opportunity during the hours of closure to thoroughly digest news, so that on the reopening of the House for business there was a complete absence of panic or open excitement. And so on during the week the market has preserved an almost callous attitude in the face of the conflicting rumours which every other hour has heard. The difficulty in separating truth from falsehood is so generally recognised that very little heed is paid to even the most exciting canard. Indeed, the Stock Exchange has almost lost its character of a barometer in connection with this Transvaal business, and men hear the most startling stories with curiosity, perhaps, but without the slightest inclination to turn them into a pretext for speculation. Presumably this state of affairs will come to an end when some definite decision has been arrived at either in Parliament, or among the directors of the Chartered Company. The debate on the Colonial vote, with its bearings on recent in South Africa, which was opened this afternoon in the House of Commons, had not made sufficient progress up to the hour of closing the Stock Exchange to have any palpable effect upon markets. Whether Messrs. Rhodes and Beit's resignations from the board of the Chartered Company are accepted or not, creates very little speculation up to the present, and the common opinion is that whatever the event, it is fully discounted. In brief, the political aspect of the position is discussed apart from its bearings upon the Share Market. Accepting this view, it becomes an easy matter to dispose of the movements in the Mining Market during the past week. In very few cases are their changes of any importance, this remark applying more particularly to the African Section.

On Saturday, Chartered and Goldfields were put down about ⅜ at the opening, and they closed almost without fluctuation. The failure was announced of a small jobber in the South African department, but his account was not sufficient important to cause any commotion in its closing. Several gold shares hardened up and Diamond shares were distinctly good. Westralians were a good market, and gains preponderated. There was some irregularity in Indians. On Monday Chartered and Goldfields were sold on the first rumours of Mr. Beit's resignation, but Africans generally kept steady. West Australians were irregular with the strength of Boulders as a special feature. New Zealand shares were in demand but Broken Hills were flat. The statements made in the House of Commons on Monday evening assisted to a better opening for Kaffirs on Tuesday morning, and Goldfields led a sharp rally, the closing being generally firm in spite of the numerous bear rumours. The news of the death of Colonel North was not communicated to the Stock Exchange sufficiently early to affect prices. As far as the Mining Market is concerned, in more active times such an event would have had its effect upon the Westralian Section, but as it was, nothing occurred to call for notice. Copper shares were better, but the market generally was apathetic. Chartered and Goldfields were decidedly good on Wednesday, the suggestion among the gossips being that Messrs. Rhodes and Beit had undertaken to defray the costs for which the company might be held responsible in connection with the Jameson raid. As a matter of fact the upward movement was due to profit-taking by bears, who are almost more nervous of being caught in a decisive movement than are the opposite party. A good tone was reported in the West Australian market, the encouraging statements made at the Great Boulder meeting having had the effect of sending buyers into the market. Lady Shenton and Florence were prominent in the upward movement. Indians were well supported, and copper shares were good. On Thursday things were dull all round, and brokers and dealers began to talk about the approach of the Settlement, the former suggesting to their clients the advisability of securing profits by which the markets were weakened. Small sales were the order of the day in the Miscellaneous section. An attitude of waiting has been preserved by all parties to-day, and there are very few discrepancies between the first and the last prices.

South Africans.

Chartered, which had closed on the last day of April at 3 7/16, opened on Saturday last at 3½, but never went below 3 5/16 sellers. On Monday there was a dip to 2¾, but this was promptly recovered on Tuesday, and the last price to-night is 3½, identically the same as that established by the disclosures as to the cipher telegrams. Goldfields were sold down to 11⅜ on Monday on the strength of a story that the Transvaal Government was about to give the company notice to quit. There was a sharp recovery on the following day, and since then the promised 10s. dividend has been declared, though it had no marked immediate effect. The deferred shares are 7/16 lower on balance at 12. Goldfields Deep have lost ⅛ at 9⅜ and Gold Trust ¼ at 7¾. Rhodesia Exploring have put on ¼ at 6¼, but other Land shares are practically without change. Willoughby Consols are quoted at 1⅛, Bechuanaland at 1 1/16, Exploring Land and Minerals at 1 1/16, Mashonaland Agency at 2 1/16, Mozambique at 1 1/16, Oceana at 1⅛, and Henderson's at 2 1/16. The changes in the Barnato Group are very slight. Barney's threats to close down all the mines have not been taken very seriously. Declines of 1/16 to ⅛ are shown in the Banks at 1⅛, the Consols at 2⅛, Cœsus at 1⅛, Buffels at 3⅜, Johannesburg Investments at 3⅜, and New Primrose at 5⅞. Randfonteins are exceptionally the turn harder at 4 1/16. In the Robinson Group the hardness of Randfonteins has again been a matter for comment, but the actual gain is restricted to 1/16 at 3 1/16. North Randfonteins have put on ⅛ at 2. Block B are quoted unchanged at 1⅜, whilst Langlaagte Estate at 5 5/16, and Robinson Banks at 6⅛ are rather easier. East Rands have been persistently bought, and close ⅛ higher at 7 3/16. The Hundred Anglo-French Exploration Company is also higher on balance at 5⅛. A rumour was in circulation during the week as to the early distribution of a 7s. dividend, with big bonuses for the founders. Rand Mines have fallen ⅛ to 29⅛, and Geldenhuis Deep ⅛ to 6⅛. The April crushing return shows a yield of over 4000 ounces. In the Eckstein group the only important change is a loss of ⅛ in Modders at 7⅜. The Henry Nourse return for April was 6223 ounces, and the shares are ⅛ lower at 6⅞. A similar decline is shown in Nigel shares at 3⅛, the monthly return in this case showing 2000 ounces of gold. Jubilee at 9, and Geldenhuis at 4⅛, are the turn easier, whilst Heriots at 9⅞, and Jumpers at 7⅜, are both rather better. Small gains are shown by Durban Roodeport at 6⅛, Knights at 6 1/16, Meyer and Charlton at 6⅛, Van Ryn at 5⅛, New African at 4, and Robinson at 9⅛. Wolhuter has lost ⅛ at 7⅞, and Chimes 1/16 at 1 3/16. Shebas have been flat on a considerable falling off in the crushing returns, due to comparison with abnormal figures. The shares are ⅛ lower at 1 1/16. Klerksdorps have been bought on encouraging news from the property, but close below the best, 1s. 6d. up at 16s. The Lydenburg Group has been active at times, and Spitzkops are 1s. better at 16s. 6d. De Beers have been in steady demand, and close just a point to the good at 29⅜, with Jagers 1/16 better at 10 1/16.

West Australians.

On Monday Great Boulders reached the goal of £10 per share, which their ardent supporters have always predicted for them. We may recall the fact that early in 1895 we recommended a purchase of these shares when they could be bought at 12s. 6d. The highly satisfactory statements by Mr. Zebina Lane at the shareholders' meeting on Wednesday, caused a rush of buyers before whom the quotation advanced to 10½. There has since been a reaction on profit taking, and at 9⅞ the shares are only ⅛ up on the week. Hannan's Brownhill have shown renewed weakness and close ⅝ down at 6⅞. Others of the Hannan's group are better, more particularly Proprietary at 1 1/16, Star at 1¼, Oroya at 1⅜, and True Blue at 1¼. Lady Lochs were specially weak on Saturday, and have never properly recovered, closing ⅜ lower at 3 1/16, despite the announcement on Wednesday of a crushing of 854 ounces of gold from 200 tons of quartz. Associated are unchanged at 1 1/16, but Lake Views have improved ¼ to 4⅝, and Lake View South to 1/16 to 1⅜. The Menzies group has attracted a fair amount of attention, the chief favourites being Lady Shenton and Florence. The former went over 3 in the middle of the week, but is finally only ¼ better at 2 13/16. Florence has scored ⅜ at 2 1/16. Menzies Reefs at 1 1/16, and Mining at 1 1/16 are slightly lower; but a gain of 1/16 is shown in Crusoe at 1⅜. Hit or Miss closes ¼ higher at 1 1/16, after fluctuating from day to-day and White Feathers are ⅛ better at 2½. Goldfields are the turn harder at 8, and a and a strong upward movement has taken place in Hampton Plains, which close 1/16 higher at 5 1/16 on the circular announcing that shareholders have a right to apply at par for allotments of shares in Coolgardie Waterworks, and other subsidiary undertakings, in the proportion of 10 per cent. in each upon their holdings. Golden Crowns have given way on realisations, and close ⅜ down at 2⅜. There are very few other changes calling for detailed notice, as business throughout the week has been on a small scale.

Miscellaneous

Copper shares have once more attracted attention, and Tinto have improved ⅜ to 20⅜. Smaller gains are shown in Capes at 2⅛ Tharsis at 5⅛, and Libiola at 2⅞. Indians have been firm and the leading descriptions show small improvements, Champion Reefs at 6 1/16, Mysore at 6⅛, and Ooregum at 3⅛. In the New Zealand Group Kapanga has been prominent, on the news of the striking of a three-inch reef. The shares close 1s. 3d. higher at 15s. 3d. Waihi has improved ¼ to 6⅜, and Waitekauri ⅛ at 4⅛. Charters Towers varieties have been quiet. Mills Day Dawn are rather easier at 1 1/16, but New Queens have been in demand, and, after changing hands at 9s., close 1s. 3d. up at 8s. 9d. Broken Hills have lost ⅛ at 2⅜, as have British at 22s. 6d. Alaska Mexican has fallen ⅛ to 1⅛, and Treadwell ¼ to 5. Mount Morgans are ⅛ better at 3⅜. Wentworths are the turn lower at 1, but Aladdins have hardened to 1⅜.

STOCK EXCHANGE SETTLING DAYS.

CONSOLS.
Monday, June 1.

MINING MAKING-UP DAYS:
Monday, May 11 | Tuesday, May 26

MINING NAME DAYS:
Tuesday, May 12 | Wednesday, May 27

ACCOUNT DAYS:
Thursday, May 14 | Friday, May 29

HOLIDAY: Monday, May 25

SIDE LIGHTS ON THE LAW:

Legal Jottings on Cases in the Courts, and on Questions affecting Mining, Railway, Financial, Industrial, and allied Interests.

BY A BARRISTER.

IT is only fair and right that the sturdy Englishman should be able to bear criticism. If he attains a position of eminence, he is certain to get it, and if he is worth his salt, he puts up with it. The Master of the Rolls, now over 80, has been the subject of what was little short of a personal attack by a solicitor, who complained that he had briefed an eminent member of the Chancery Bar to argue an appeal, but his brief was refused on the ground, it was alleged, that this learned leader was unwilling to submit himself as a butt of the buffoonery of the learned judge who presided in the First Appeal Court. Can no one interfere? cries the solicitor; and he adds, "So far as I know, not one member of either branch of the profession has a good word to say with reference to Lord Esher, except as to his undoubted abilities." All I have to say is, that as a member of the other branch of the profession I think the solicitor has been singularly unfortunate. On the contrary, I know many—and their name is legion—who speak and have spoken for years of the kindness of the great legal luminary who presides in the Court of Appeal, and who are as convinced as I am of his eminently conscientious endeavour to do right and give justice, and who feel that no more upright Judge ever adorned an English Bench. If a quickness of perception, which has increased in a remarkable manner with advancing years, has led the Master of the Rolls to break through tedious argument in a roughshod manner, at any rate there is this to be said, it has often led to getting at the root of the matter, and it has been administered with delightful impartiality to the young and the experienced advocate alike. Many a barrister, however, can tell of occasions when Lord Esher has broken through his eloquence in a manner which may be so distasteful to the dignity of the eminent leader of the Chancery Bar, and has come to his aid by stating in a nutshell what he might have laboured long in explaining.

THE solicitor above referred to who wrote to the *Law Times* about the Master of the Rolls found another Chancery Queen's Counsel to appear for him in the Court of Appeal, but, although the Master of the Rolls was affability itself, the learned counsel was not particularly successful. His object was to raise an important point as to a floating debenture. The Court was unanimously of opinion that the point raised was highly technical, and held that the holder of a debenture on the whole undertaking possessed a charge on the assets dwhich stood before an execution creditor who had seized some of the assets, notwithstanding the holder of the debenture had not applied to the Court for a receiver or applied to wind up the company. The result of this decision would appear to be that although the company is entitled, where there is a floating debenture, to contract and pay its debts in the ordinary course of business, yet an execution which follows upon neglect by a company to pay its debts is not dealing in the ordinary course of business, and that, therefore, between the holder of the floating debenture and the execution creditor it is a question of priority of charges. If, however, the execution creditor seizes the goods, and has them sold, and receives the proceeds, it would seem, by reason of a decision of last year, that then the holder of the debenture is too late to claim. The debenture holder would appear to be in time, any time up to the sale by the execution creditor, if not to the actual handing over of the monies to him.

THE point has been taken off the death sentence on the Outlanders and the subsequent remission, by the answers in Parliament calling attention to the fact that death in this country is the penalty for high treason, as it is for murder; but although it must be pronounced in cases in which the prisoner pleads, or is found guilty, yet it does not follow that it will be carried out. No sentence of death for treason has, in fact, been carried out in this country since the Cato-street Conspiracy in 1820, when Thistlewood and four others were executed for treason.

THE METAL MARKETS.

LONDON METAL MARKET.

THE METAL MARKET, LONDON, MAY 8.

Copper.

THERE is no new feature of interest in the speculative market, which has passed off very quietly both as to volume of business and extent of fluctuations. The G.M.B. market opened with three months in active request, and £45 15s. and £45 16s. 3d. was paid, but sellers at this figure were plentiful, and values at once receded to £45 13s. 9d. three months, and £45 8s. 3d. cash being accepted. Tuesday's business was quiet at £45 7s. 6d. s.c., and £45 13s. 9d. three months. Wednesday showed a slight improvement, spot being dealt in at £45 8s. 9d. and £45 7s. 6d. and three months at £45 13s. 9d. and £46 15s. Yesterday morning brought a further advance, cash changing hands at £46 10s., and three months at £45 16s. 3d., but this afternoon was rather less, and to-day £45 8s. 9d. and £45 13s. 9d. respectively were accepted. We close quiet at £45 8s. 9d. sellers of s.c., and £45 15s. sellers of three months.

Tin

Has been a quiet but very steady market throughout, the cash value ruling during the first three days at £59 15s. to £59 17s. 6d., and the three months price at £60 7s. 6d. to £60 10s. On Thursday the tendency was easier, and business was done at £59 11s. 3d. for spot Straits, and £60 7s. 6d. to £60 2s. 6d. for forward. To-day cash touched £59 7s. 6d. and three months £60, and the market closed flat at £59 7s. 6d. to £59 10s. s.c. and £60 to £60 2s. 6d. three months. The Dutch market, like our own, at first improved, viz., from fl 35¾ s.c. and fl 36 three months Billiton to fl 36 and 36⅛ respectively, but lost ⅛ fl on Thursday, closing lower again this morning at fl 35¾ and fl 35½ three months Billiton, with Banca at fl 36¼.

Pig Iron

Last week's shipments from Scotland amounted to about 5600 tons, as against about 9000 tons for the parallel period of 1895. Scotch warrants were done on Tuesday in Glasgow at 48s. 4½d. to 48s. 4d. cash, on Wednesday at 48s. 3½d. to 48s. 0½d., on Thursday at 48s. 11½d. to 48s. 9½d., and to-day at 48s. 10½d. to 48s. 8½d., closing dull at 48s. 8d. buyers of s.c., with a month at 48s. 10d., and Hematite and Middlesbrough quoted respectively at 47s. and 37s. 2d.

Lead

remains steady, but without the good demand which was the feature of last week's close. The final quotations are £11 1s. 3d. soft foreign, and £11 7s. 6d. English, a decline of 1s. 3d. for the week.

Spelter

which closed last week at £16 10s. sellers, bounded up at the beginning of the present week to £16 18s. 9d., everyone buying eagerly. The close is quiet at £16 15s. to £16 17s. 6d. ordinaries, and £17 to £17 2s. 6d. specials.

Antimony

is quiet and unchanged at £30 to £30 10s.

Quicksilver

is quiet at £8 15s. firsts and £8 14 seconds.

The following are to-night's (May 8) prices of metals:—

	£	s.	d.		£	s.	d.
Copper.							
Tough cake and ingot	49	0	0	.....	49	5	0
Best selected	49	15	0	.....	50	5	0
Electrolytic Copper	50	10	0	.....	52	0	0
Sheets and sheathing				.....	55	0	0
Flat bottoms				.....	58	0	0
Chili bars, Good merchantable, spot, & 3 months respectively	45	8	9	.....	45	15	0
Copper tubes, seamless				.....	0	0	7¼
Alloys.							
BRASS: Wire				.....	0	0	5¾
" Tubes (solid drawn)				.....	0	0	6¼
" Sheets				.....	0	0	8
PHOSPHOR BRONZE: Alloys II.				.....	78	0	0
" III. of Cog Wheel Brand				.....	81	0	0
" VII.				.....	83	0	0
" XI.				.....	73	0	0
" Vulcan brand A1				.....	72	0	0
DURO METAL				.....	75	0	0
BULL'S METAL				.....	65	0	0
Ferrobronze (Vivian's).							
Ingots ...per lb.	0	0	5¾	.....			
Ordinary sheets, plates, bolts and bars	0	0	6¾	.....			
Screw bolts and nuts	0	0	8¾	.....			
Pump rods, plain	0	0	7¾	.....			
" finished	0	0	10¾	.....			
DELTA METAL: No. 4 (per ton)				.....			
" Sheets and plates (per lb.)				.....			
" Bars, round, square, flat (per lb.)				.....			
" hexagon (per lb.)				.....			
Tin.							
English, ingots, f.o.b.				.....	63	10	0
" bars				.....	64	10	0
" refined				.....	65	10	0
Straits, spot and 3 months respectively	59	10	0	.....	60	2	6
Australian spot, and three months respectively	60	15	0	.....	61	7	6
Banca " (in Holland)	60	17	6	.....	61	0	0
TIN PLATES: Charcoal, best quality per box	0	14	3	.....	0	17	0
" ordinary	0	10	6	.....	0	13	6
" Coke, best quality	0	9	6	.....	0	9	9
" ordinary	0	9	0	.....	0	9	3

These prices of tinplates are f.o.b. at Swansea; at Liverpool 6d. per box more.

Iron.							
Pig, G.M.B., f.o.b., Clyde, spot				.....	2	5	6
" Scotch pig, No. 1 Gartsherrie				.....	2	10	6
" " Coltness				.....	2	12	6
" " Clyde				.....	2	10	3
" " Govan				.....	2	7	6
Bars, Welsh, f.o.b. Wales				.....	5	5	0
Plates "				.....	6	5	0
Bars, Staffordshire, at works				.....	5	10	0
Sheets " "				.....	6	10	0
Plates " "				.....	6	7	6
Hoops " "				.....	5	15	0
Ship plates, Middlesborough				.....	5	1	3
STEEL: English spring				.....	10	0	0
" " cast				.....	42	0	0
" Rails at works, according to section				.....	5	0	0
Lead.							
Spanish or soft foreign				.....	11	1	3
English pig, common				.....	11	7	6
" L.B.				.....	11	12	6
" sheet and bar lead				.....	12	5	0
" pipe				.....	12	15	0
" red				.....	14	10	0
" white				.....	17	10	0
" patent shot				.....	14	15	0
Spelter.							
Silesian ordinary brands	16	15	0	.....	16	17	6
" special brands	17	0	0	.....	17	2	6
English Swansea				.....			
Sheet Zinc	19	10	0	.....	19	15	0
Antimony.							
Antimony	30	0	0	.....	30	10	0
Quicksilver.							
Flasks, 75 lbs. warrants	6	14	0	.....	6	15	0
Manganese.					per unit.		
Ore, c.i.f., U.K. ports							
1st quality, 50 per cent. and upwards	0	0	11	.....	0	1	1
2nd " 47 per cent. to 50 per cent.	0	0	10	.....	0	1	0
3rd " 40 " 47 per cent.	0	0	9	.....	0	0	11
Aluminium.							
98-99½ per cent. (guaranteed 98 per cent. min.) in ingots (1 cwt. lots)	Per lb.			.....	Per lb.		
do (1 ton lots)				.....	0	1	6
					0	1	4½
Nickel.							
98-99 per cent. guarantee	0	1	2	.....	0	1	0

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—*Ay*, Antimony; *A*, Arsenic; *Bl*, Blende; *Bx*, Borax; *C*, Copper; *D*, Diamond; *G*, Gold; *I*, Iron; *L*, Lead; *M*, Mundic; *N*, Nitrates; *P*, Phosphates; *Q*, Quicksilver; *R*, Ruby; *S*, Silver; *S-l*, Silver-lead; *Sul*, Sulphur; *T*, Tin; and *Z*, Zinc. * in the "Amount of Share" column of British Mines signifies that the mine is conducted on "Cost Book" principles; † in the "Head Office" column of African Mines signifies that the address given is not that of the head office, but of a sub, or transfer office; and ‡, following the names of African Mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

*** The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share Dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that, while our Share List will almost invariably be found correct, we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.

AFRICAN MINES.

Name.	Closing Price. May 8, 1896	Closing Price Apr. 30, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
			£		£ s. d.			
Abbott's Con. Reefs	6/ 7/	6/ 7/	1 0	—	1 0 0	—	De Kaap	Broad Street Avenue
Aldier Consolidatd	1 1/16 1 3/16	1 1/16 1 1/8	1 0	2/& rtsOc.16 95	1 0 0	25°,000	—	1, Moorgate place.
African Estates.....	2 3/8 2 1/4	2 1/16 2 3/16	1 0	rts Oct 30 '95	1 0 0	438,602	,,	3, Copthall-buildings
,, Gold Revrv.	1 1/8 1 1/4	1 1/8 1 1/4	1 0	—	1 0 0	175,000	—	23, College Hill.
Africana	3/8 3/4	9/16 11/16	1 0	—	1 0 0	1,075,000	—	34, Clement's lane
Afrikander	1 3/8 1 1/4	1 3/8 1 1/4	1 0	rts May 24 '95	1 0 0	40,000	Transvaal.	23, College Hill
Alexandra Estate *G*	3/8 3/4	11/16 13/16	1 0	—	1 0 0	225,000	Rand	16, George street
Anglo-French Exp.	5 1/16 5 1/16	5 5/8	5 0	15 % Aug 29 '95	5 0 0	30,300	S. Africa	3, Princes street
,, Matabeleland	2 2 1/8	2 1/4 2 3/4	1 0	—	1 0 0	39,750	Matabld.	Winchester House.
Appantoo .... *G*	—	—	1 0	—	1 0 0	77,885	West Cost	Dashwood House.
Aurora ... .*G*	1 3/4 1 5/8	1 3/4 1 5/8	1 0	5 % Mar.'93	1 0 0	65,000	Rand	8, Old Jewry.I
,, West United.	1 3/4 1 5/8	1 3/4 1 5/8	1 0	—	1 0 0	100,000	,,	7, Lothbury
Austral-African ...	1 5/16 1 3/16	1 5/16 1 1/16	1 0	3/-Dec. 16 '95	1 0 0	250,000	—	Token.Ho., Opthill Av
Balkis Eerstelling *G*	2/8 3/	2/9 3 3	10/	—	0 10 0	520,000	Transvaa	85, Gracechurch-st,
,, Land	4/9 5/3	5/3 5/9	10/	1/ Feb. 13, '96	0 0 0	520,000	,,	,,
Bantjes Consol ...*G*	4 1/16 4 3/16	4 4 1/8	1 0	rts Sep 24 '95	1 0 0	83,000	,,	15, Geo. st., Mn Ho.
Barnato Bank	1 1/16 1 1/8	1 1/16 1 1/8	1 0	—	1 0 0	2,625,000	,,	7, Lothbury
,, Consol ...	2 1/16 2 1/8	2 1/16 2 1/16	1 0	—	1 0 0	1,000,000	—	,,
Barrett..... ...*G*	10/6 11/	11/ 11/6	10/	—	0 9 0	407,496	De Kaap	17, Basinghall-street
Bechuanaland Exp.	1 1/8 1 3/8	1 7/16 1 9/16	1 0	rts Jy 24 '95	1 0 0	400,000	Bechuana.	19, St.Swithin's-lane.
,, Trad g Assoc.	1 1/8 1 1/8	1 1/8 1 1/8	1 0	5 pc Jan 16, 96	1 0 0	100,000	,,	72, Basinghall street
Ben Trovato	1/8 3/8	1/8 3/8	—	—	—	—	—	2, Austin Friars.
Big Golden Quarry	/6 1/	/6 1/	5/-	—	0 5 0	483,228	Kaap Rivr	Warnford Court.
Block "B" Lang.	1 1/8 1 1/16	1 1/8 1 1/16	1 0	—	1 0 0	535,000	Rand	8, Princes-st, E.C.
Bonanza	2 1/8 2 3/8	2 1/8 2 3/8	1 0	—	1 0 0	2 0,000	Turffont'n	120, Bishopsgate-st.
Brit. S. A. Char. ..	3 1/16 3 3/16	3 1/16 3 3/16	1 0	rts Jy 26 '95	1 0 0	1,999,750	S. Africa	15, St. Swithin's-lane
Buffelsdoorn..... *G*	2 1/16 2 1/16	2 3/4 3	1	16/-Nv. 28 '95	1 0 0	250,000	Potchefstr	7, Lothbury.
,, Central	1/8 3/4	1/8 3/4	1 0	—	1 0 0	—	—	8, Old Jewry
,, Consolidated	1 1/16 1 1/16	3/4 7/8	1 0	—	1 0 0	225,000	—	Warnford Court
Cape Asbestos	3/4 1	3/4 1	1 0	—	1 0 0	50,311	Orange Rv	19, St. Swithin's-lane
,, Copper .....*C*	2 1/16 2 1/16	2 1/2 2 5/8	2 0	2/6 Dec.16, '95	2 0 0	300,000	Cape Col.	9, Queen-street-place,
,, 6 % Pref. ...	2 3/4 2 7/8	2 3/4 2 3/4	2 0	2/6 Dec.16, '95	2 0 0	45,000	,,	,,
Cassel Coal.....	1 3/8 1 3/4xd	1 3/8 1 3/4xd	1 0	1/6 Apr, 29 '96	1 0 0	75,000	Johanbrg.	99, Cannon-street.
Cen. de Kaap	1/ 1/6	1/3 1/9	5/-	—	0 2 6	—	De Kaap	Palmerston Bldgs
,, Roodp't Deep	2 2 1/4	2 2 1/4	1 0	—	1 0 0	220,000	—	120, Bishopsgate st.
Champ d'Or..... *G*	2 2 1/4	2 2 1/4	1 0	3/2 Feb. 27 96	1 0 0	116,016	Rand	8, Old Jewry, E.C.
Charterland G.F ...	9/16 11/16	11/16 13/16	1 0	—	1 0 0	150,000	—	19, S. Swithin's lane
Chimes West	1 3/8 1 3/8	1 3/8 1 3/8	1 0	—	1 0 0	150,000	—	Winchester Ho.
City and Sub. N.W *G*	4 3/4 4 7/8	4 3/8 4 3/4	4 0	10/-June'95	4 0 0	340,000	Rand	Gresham Ho.
Con, Builtfontein *D*	33/ 34/	33/ 34/	1 0	9d, Jan. 16 '96	1 0 0	721,500	Griqualad	52, Lombard-st
Con. Deep Levels *G*	5 1/8 5 3/4	5 1/8 5 1/4	1 0	4/- Jy 11 '95	1 0 0	187,250	Transvaal	30, St. Swithin's-lane
Con. G. Fields S A.	11 7/8 12 1/8	12 3/4 14 1/4	1 0	20/ Nov. 14 '95	1 0 0	1,2 0,000	S. Africa	8, Old Jewry.
Do. 6 % Pref.	25/3 25/9	25/3 25/9	1 0	7 1-5d Dc30'95	1 0 0	1,242,999	,,	,,
Do. 5 1/2 % Deben...	103 109	105 1/2 109 1/2	5 0	5 1/2 Jan. 2 '96	5 0 0	600,000	,,	,,
Crown Deep .....*G*	11 12	10 1/2 11 1/2	1 0	—	1 0 0	250,000	Rand	120, Bishopsgate-st.
,, Reef .....*G*	11 1/2 11 3/4 xd	11 1/2 11 3/4 xd	1 0	10/-Apr. 29 '96	1 0 0	120,000	,,	,,
DeBeers Consol. *D*	29 5/16 29 1/16	28 3/4 28 1/4	5 0	15/- Jan. 15 '96	5 0 0	789,791	Kimberl'y	62, Lombard-street.
Do. 5 % 1st Deb....	108 1/2 109 1/2	108 1/4 10 9 1/4	—	5 % Jan. 2 '96	—	£3,500000	,,	,,
Do. 5 1/2 % Bul. Ob.	103 1/2 104 1/2	102 104	—	5 1/2 % Oct, '95	—	720,000	,,	,,
Doornkop	4/ 5/	4/6 5/6	1 0	—	1 0 0	250,000	Doornkop	Warnford Court
Driefontein	2 1/8 2 3/4	2 1/8 2 3/4	1 0	—	1 0 0	175,000	—	Winchester Ho,
Durban Roodepit. *G*	6 1/2 6 3/4	6 1/2 6 3/4	1 0	3/- Dec, 16 '95	1 0 0	£125,000	Rand	28, Leadenhall-bldgs
,, Deep.....	3 1/2 3 3/4	3 1/2 3 7/8	—	—	—	—	—	—
Eastleigh .....*G*	1 1/16 1 1/16	1 1 1/8	1 0	—	1 0 0	240,000	Klerksdrp	52, Leadenhall Street
East Orion..... ...	5/16 5/16	5/16 5/16	1 0	—	1 0 0	275,000	Rand	8, Old Jewry.
,, Rand.....*G*	7 1/8 7 1/4	6 15/16 7 1/16	1 0	—	1 0 0	570,000	,,	170, Winchester-ho.
Exploration	3 3/8 3 5/8	3 3/4 3 5/8	1 0	5/- Mar. 12 '96	1 0 0	148,000	S. Africa	30, S. Swithin's-ln.†
Exploring L & M....	1 3/4 1 3/8	1 3/4 1 3/8	1 0	2/ Dec. 16, '95	1 0 0	216,215	,,	19, ,,
Ferreira .....*G*	19 3/4 20 1/4	19 1/2 20 3/8	1 0	13/ Mar. 12 '96	1 0 0	45,000	Rand	120, Bishopsgt st. Wn
French Rand	2 15/16 3 1/16	3 3 1/8	1 0	—	1 0 0	480,000	Rand.....	28, Austin Friars.
Geldenhuis Deep *G*	6 6 1/8	6 6 1/8	1 0	—	1 0 0	265,000	Transvaal .	30, St. Swithin's-lane.
Geldenhuis Est. *G*	4 1/8 4 1/4	4 1/8 4 1/2	1 0	6/- Jy 26 '95	1 0 0	187,500	Rand	120, Bishopsgt st. Wn
,, Main Reef	1 1 1/8	1 1/16 1 1/8	1 0	2/ Feb, 13 96	1 0 0	150,000	,,	Warnford Court, E.C
George Goch ...*G*	2 5/16 2 7/16	2 5/16 2 7/16	1 0	—	1 0 0	100,000	,,	Johannesburg.
Ginsberg New ...*G*	1 15/16 2 1/16	1 15/16 2 1/16	1 0	—	1 0 0	130,000	Driefon .	Warnford Court, E.C†
Glencairn .....*G*	3 3/4 3 3/4	3 3/4 3 3/4	1 0	2/6 Feb. 13 '96	1 0 0	200,000	Rand	2, Drapers-gardens.
Gld. Fls. Deep...*G*	9 1/4 9 3/4	10 10 3/4	1 0	—	1 0 0	600,000	S. Africa	8, Old Jewry.
G.F. of Lydenb'rg	2 1/2 2 3/4	2 3/4 3	1 0	—	—	—	Lydenb'rg	7, Lothbury.
G. F. of Mashonld.	1/4 3/8	3/8 3/8	1 0	—	1 0 0	200,000	Mashonld.	19, St. Swithin's-ln.
G.F. of T.de Fuego	4/3 4/9	4/- 4/6	—	—	—	—	—	—
Graskop .....*G*	4/6 5/	4/9 5/3	5/-	1 3/8 % Mar. '92.	0 5 0	400,000	Lydenburg	2, Tokenhouse Bldgs
Gt. Eastrn. Col lery	1 1/4 1 3/4	1 1 1/4	1 0	—	1 0 0	376,566	Grootolei	8, Finch Lane
Griqualand W....*D*	8 1/4 8 1/2	8 3/8 8 5/8	10 0	4/ Jan 16, '96	10 0 0	105,700	Transvaal .	62, Lombard-street
Heidelbg. Est. Ex:	1 3/16 1 5/16	7/8 1	1 0	—	—	—	Heildelbg.	
Henderson's Trans	2 1/4 2 3/8	2 1/4 2 3/8	1 0	—	1 0 0	250,000	Zoutpanbg	85, Gracechurch st.
Henry Nourse ...*G*	6 3/4 7	6 7/8 7 1/8	1 0	—	1 0 0	100,000	De Kaap ...	Warnford-court.
Hetty	3/8 3/4	3/8 3/4	1 0	—	1 0 0	110,000	Middlevel.	55, Bishopsgate st Wn
Joe's Reef .....*G*	5/16 5/16	5/16 5/16	1 0	—	1 0 0	57,404	,,	21, Mincing Lane.
Johannesbrg Invst	3 1/16 3 1/16	3 1/4 3 1/2	1 0	20 % Oct. '95	1 0 0	650,000	—	7, Lothbury.
,, Pioneer	9 1/2 9 3/4 xd	9 1/4 9 3/4 xd	1 0	12 1/2 % Nov.,'93	1 0 0	21,000	Rand.....	Johannesburg.
Jubilee .....*G*	8 1/4 9 1/4 xd	9 1/4 9 1/2 xd	1 0	4/ Apr. 29 '96	1 0 0	30,000	,,	8, Old Jewry.†
Jumpers .....*G*	7 1/4 7 1/2	7 7 1/4	1 0	6/- Mar. 27 '96	1 0 0	100,000	,,	120, Bishopsgt st. Wn
,, Deep.....	3 1/4 3 3/8	3 1/4 3 1/2	1 0	—	1 0 0	300,000	,,	30, S. Swithin's lane.
Kimberley .. ..*D*	1/ 1/8 pm	1/ 1/8 pm	1 0	2/ Jan 16, '95	0 10 0	98,672	Kimberley	19, Finsbury circus.
,, Rapt....	2 1/4 2 3/8	2 1/4 2 3/4	1 0	—	1 0 0	125,000	,,	8, Drapers-gardens.
Klerksdorp	15/9 16/3	14/6 15/	10/-	—	0 9 0	400,000	Klerksdorp	110, Cannon St.
Knight's Deep	2 1/4 2 3/8	2 1/4 2 1/2	1 0	—	1 0 0	295,194	Rand..... ...	8, Old Jewry
Koffyfontein.....*D*	1 1 1/8	1 1 1/8	1 0	—	1 0 0	125,000	Jacobsdaal	6, Gt. St. Helen's.
Lancaster	1 7/8 2	1 1/16 1 1/16	1 0	—	1 0 0	226,500	Luip. Vlei	120, Bishopsgt st. Wn
Langlaagte Est. *G*	5 1/2 5 3/4	5 3/8 5 7/8	1 0	5/ Feb 13 '96	1 0 0	470,000	Rand.....	69, Holborn Viaduct
,, Royal	2 5/16 2 7/16	2 1/8 2 3/4	1 0	rts. Mar. 6 '95	1 0 0	100,000	,,	2, Drapers-gardens.
,, Star...	1 3/4 2	1 7/8 2 1/4	1 0	—	1 0 0	170,000	,,	,,
Lisbon-Berlyn ...*G*	5/8 8/-	5/9 6/3	2/8	—	0 2 6	880,233	Lydenburg	Suffolk House.
Lon, Paris Fin & M.	1 1/16 1 3/16	1 1/4 1 1/4	1 0	—	1 0 0	500,000	—	53, Old Broad Street.
London & S. A. Ex.	14 14 1/2	14 14 1/2	10/	4/- Mar. 12 '96	0 10 0	100,000	S. Africa ...	19, Finsbury-circus.
Luipaards Vlei Est.	1 1/4 1 3/4	1 1/8 1 3/4	1 0	6 % Mar. '90	1 0 0	319,603	Rand..... ...	Warnford-court.†
Lydenburg Estate.	1 3/4 1 3/8	1 1/16 1 1/16	1 0	—	1 0 0	190,000	Lydenburg	85, Gracech, Street
,, Ld & Expl	3/4 3/4	3/4 3/4	1 0	—	1 0 0	200,000	,,	120, Bishopsgte St.
,, M'g. Est.	4 3/8 5 1/8	4 1/4 5	1 0	—	1 0 0	300,000	,,	,,
Main Reef (New) *G*	1 1/8 1 3/8	1 1/8 1 3/4	1 0	—	1 0 0	111,503	Rand.....	15, George St., Mn H
Malmani Gold Syn	3/8 4/8	3/6 4/6	3/6	—	0 2 6	200,000	Transvaal	Throgmorton House,
Marie Louise.....	2 3/8 3 1/8	2 3/8 3 1/4	1 0	—	1 0 0	60,000	Rand.....	15, George St , Mn H
Marievale Nigel ...	1 1 3/8	1 1 1/8	1 0	—	1 0 0	250,000	,,	,,
Mashon. Agency...	2 1/4 2 1/2	2 1/8 2 3/8	1 0	2/ Ap. 16 '96	1 0 0	100 000	Mashonald	8, Old Jewry, E.C.
,, Central...	3/8 1	3/8 1	1 0	—	1 0 0	180,000	,,	,,
Matabeleil'd G. R'f	3 1/2 4	3 1/4 4	1 0	—	1 0 0	110,000	Matabeleil'd	3, Copthall-buildings.
May Con. (New) *G*	2 15/16 3 1/16	3 3 1/16	1 0	2/- Mar. 12 96	1 0 0	236,500	Rand..... ...	4, Lothbury.†
Meyer & Charl....*G*	6 3/4 6 3/8	6 7/8 6 3/4	1 0	5/ Feb. 13 96	1 0 0	75,020	,,	1, Crosby Square.†
Minerva	1 3/8 1 1/2	1 3/8 1 1/4	1 0	—	1 0 0	150,000	,,	Winchester House.
Mines Selection ...	3/4 1	7/8 1	1 0	—	1 0 0	100,000	—	33, Br'd St. Avenue.
Modderfontein.. *G*	7 1/4 8	8 1/8 8 3/4	1 0	—	1 0 0	200,000	Rand.....	13, George Street
,, "B" Extensn.	2 2 3/8	2 1/4 2 3/8	—	—	—	—	—	28, Austin Friars
Molyneux Consoll.	1 3/8 1 1/2	1 5/16 1 7/16	1 0	—	1 0 0	220,000	Modderfin	120, Bishopsgate st
Moodies .....*G*	2 3/16 2 5/16	2 3/16 2 5/16	1 0	-/4 May '90	1 0 0	240,000	,,	Gresham House.†
Mozambique.....	1 1/2 1 3/8	1 1/8 1 3/8	1 0	—	1 0 0	400,000	S.E. Africa	13, Austin Friars.
Namaqua .....*C*	1 3/4 1 1/2	1 3/4 1 3/4	2 0	2/6 July '91	2 0 0	94,331	Namaquald	34, Leadenhall-bldg.
New African	3 7/8 4 1/4	3 3/4 4	1 0	20/ Dec. 30 '95	1 0 0	190,000	—	63, Hatton Garden.
,, Chimes..... *G*	1 3/8 1 3/8	1 3/8 1 7/8	1 0	1/- Mar. 27 '96	1 0 0	100,000	Rand.....	8, Old Jewry, E.C
,, Comet	2 3/4 3	2 3/8 3	1 0	—	1 0 0	175,000	Heidelberg	Winchester-house.
,, Croesus..... *G*	1 9/16 1 11/16	1 9/16 1 3/4	1 0	rts Apr 17 '95	1 0 0	255,000	Langlaagte	120, Bishopsgt st. Wn
,, Gordon.....*D*	6/ 7/	6.6 7/	1 0	5 % Dec. '89	1 0 0	404,344	Griqualand	110, Cannon-street.
,, Heriot .....*G*	9 3/4 10 xd	9 1/2 9 3/4 xd	1 0	4/ Apr. 29, '96	1 0 0	88,750	Rand.....	96, Gresham Ho EC
,, Jagersf. ...*D*	10 3/4 10 3/8	10 1/2 10 5/8	5 0	10/ Apr. 15 '96	5 0 0	200,000	Transvaal .	5, Copthall-buildings
,, Kleinfontein *G*	3 7/8 4 1/4	3 3/4 4	1 0	12 1/2 pc Mar. '95	1 0 0	82,500	Rand.....	Winchester House
,, Midas .....*G*	4 4 1/2	3 7/8 4 1/2	1 0	rts Jan. 16, '96	1 0 0	150,000	Mid'le Vlei	120, Bishopsgt st. W
,, Primrose ...*G*	8 1/4 9	8 7/8 9	1 0	5/ Feb. 12, '96	1 0 0	278,750	Rand.....	2, Draper's-gardens.
,, Rietfontein *G*	4 4 1/4	3 15/16 4 1/16	1 0	—	1 0 0	160,000	,,	Warnford ct., E.C.
,, S.Augustine *D*	3/3 3/6	3/3 3/9	1 0	—	0 18 0	899,127	Griqua W	30-1, St. Swithin's-l.
,, Spes Bona...*G*	1 1/8 1 1/2	1 1/4 1 1/2	1 0	—	1 0 0	115,701	Rand.....	24, N. Johnst., Lpl
,, Stephen Bellairs	1 1/2 1 5/8	1 1/2 1 5/8	1 0	—	1 0 0	150,000	Heidelbrg	19, Bury St. , E C

AFRICAN MINES—(*Continued*).

Name.	Closing Price, May 8, 1896	Closing Price, Apr. 30, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
			£		£			
Nigel .....*G*	3 1/2 3 5/8	3 1/2 3 3/4	1 0	rts Aug 10 '95	1 0 0	150,000	Rand.....	96, Gresham Ho., EC
,, Deep .....*G*	1 3/4 1 7/8	1 13/16 1 15/16	1 0	—	1 0 0	195,000	Heidelberg	8 Old Jewry.
North Randfontein	1 7/8 2 1/8	1 7/8 2 1/4	1 0	—	1 0 0	235,000	—	8, Princes street
Nourse Deep.....	4 4 1/2	4 4 1/2	1 0	—	1 0 0	375,000	Rand	120, Bishopgt.-st., Wn
Oceana	1 13/16 1 15/16	1 11/16 1 13/16	1 0	2/-Nov. 28 '95	1 0 0	357,400	Wtrbg Lyn	13, Austin Friars,
,, Development	9/16 11/16	5/16 11/16	1 0	—	1 0 0	50,000	Heidelbrg.	,,
,, Minerals ...	13/16 15/16	3/4 1	1 0	—	1 0 0	5.0,000	,,	,,
Orange F.S.E. ...*D*	3 1/4 3 3/4	3 1/4 3 1/4 xd	1 0	2/6 Apr.,29, 96	1 0 0	284,000	OrangeF.S.	10, Moorgate-street,
Orion (New).....*G*	2 1/16 2 3/16	2 1/8 2 1/4	1 0	10 % Aug, '95	1 0 0	30,000	Rand.....	8, Old Jewry.
Paarl Central ... *G*	1 1/16 1 3/16	1 1/8 1 3/4	1 0	—	1 0 0	138,750	Transvaal .	120, Bishopsgt st, W.t.
Pardy's Mozambq.	1 1/8 1 1/4	1 1/2 1 3/4	10/	rts Mar 12 '96	0 10 0	60,000	S.E. Africa	Broad St. Avenue.
Piggs Peak .....*G*	3/8 1/2	3/8 1/2	1 0	—	0 17 0	200,000	Swaziland .	6, Queen-street-place
Porges Randfontn.	1 5/8 1 7/8	1 5/8 1 7/8	1 0	2/ Feb. 13 '96	1 0 0	437,500	Rand	1, Bank Buildings
Potchefstroom... *G*	3/8 1/2	9/16 5/16	1 0	—	1 0 0	389,750	Potchefstr	19, Bury-st., E.C.
Princess Estate *G*	2 1/16 2 1/16	2 1/8 2	1 0	—	1 0 0	125,000	Rand.....	33, Cornhill, E.C.
Rand Central Ore	2 2 1/4	2 2 1/4	1 0	25 p c Aug. 95	1 0 0	115,000	—	8, Princes-street, E.C.
Randfontein .....*G*	3 1/2 3 5/8	3 1/16 3 3/16	1 0	—	1 0 0	2,000,000	Rand.....	1, Bank Buildings
Rand Mines ..... *G*	29 29 1/2	29 1/2 30	1 0	—	1 0 0	332,798	,,	120, Bishopsgt st. Wn
Rand-Rhodesia Ex	3/8 7/8	7/8 1	1 0	10 p.c. Oct. '95	1 0 0	25,000	R&Rhodesia	123, ,,
Rhodesia Ex & Dv.	6 6 1/2	6 1/2 6 3/4	1 0	—	1 0 0	50,000	Mt &Mash'l	8, Old Jewry.
Robinson(SA)Bank	6 6 1/2	6 6 1/2	4 0	4/ Apl. 15, 96	4 0 0	750,000	—	8, Prince's-street
,, Deep.....	7 8	7 8	1 0	—	1 0 0	500,000	M'nR'f'Rnd	120, Bishopsgate st.
,, Diamond	1 1/8 1 3/4	1 3/8 1 3/4	1 0	—	1 0 0	350,000	Kaal Valley	8, Prince's street
,, Gold	9 1/2 9 3/4	9 9 1/4	5 0	8/ Feb 13 '96	5 0 0	550,000	M. Rf.'rand	28, Austin Friars, E.C
,, Randftn.	1 1/2 1 3/4	1 5/8 1 11/16	1 0	—	1 0 0	517,000	Rand.....	8, Prince's-street.
Roodepoort Deep	3 3 1/8	3 1/16 3 1/16	1 0	—	1 0 0	170,000	,,	8, Old Jewry, E.C.
Roodepoort Un. *G*	5 1/2 5 3/4	5 3/8 5 5/8	1 0	5/ Feb 13 '96	1 0 0	130,000	,,	Warnford-court.†
Rose Deep.....	5 5 1/8	5 5 1/4	1 0	—	1 0 0	300,000	M. Rf.'rand	30-31, S.Swith'n. lane,
Rothery Block.....	8/ 10/	8/ 10/	1 0	—	—	—	—	55, Bishopsgate st.
St. Angelo	4 1/8 4 3/8	4 1/8 4 7/8	1 0	—	1 0 0	175,000	—	Winchester House,
St. Helen's Devel.	2 1/8 2 3/8	2 1/8 2 3/8	1 0	—	1 0 0	47,950	S. Africa ...	13, S. Helen's Place,
Salisbury New ...	4 1/8 4 3/8	4 1/8 4 3/8	1 0	—	1 0 0	99,000	Rand.....	96, Gresham Ho., EC
Sheba	1 1/8 1	2 1/16 2 1/16	1 0	1/- Apr. 15 '96	1 0 0	850,000	Lydenburg	18, S. Helen's place.
Simmer & Jack...*G*	5 6	5 6	1 0	2/ Aug 14 '95	1 0 0	250,000	Rand.....	8, Old Jewry.
S.A GoldTrustNew	7 1/4 8	8 8 1/4	1 0	15/ Feb 27 '96	1 0 0	250,000	S. Africa ...	,,
South West Rand	5/16 7/16	3/8 1/2	1 0	—	1 0 0	158,000	Rand.....	Winchester House,
Spitzkop (New) *G*	16/ 17/	14/ 15/	1 0	—	1 0 0	99,070	Lyde burg	15, Bishopsgt-st, Wn
Stanhope .....*G*	1 1 1/8	1 1/16 1 1/8	1 0	2/- Oct 20 '95	1 0 0	34,000	Rand... ..	96, Gresham Ho., EC
Sutherland R. ...*G*	5/ 6/	5/ 6/	1 0	—	1 0 0	220,000	Zoutpan bg	Dashwood Ho.
Tati Concessions ...	2 1/8 2 1/4	2 1/16 2 1/16	1 0	rts Jy. 22 '95	1 0 0	392,000	—	Gresham House.
Trans. Coal Trust...	1 1/4 1 7/16 xd	1 1/16 1 1/16 xd.	1 0	1/-Apr. 29, 96	1 0 0	439,965	Rand.....	Broad-st, House, E C
,, Consolidatd	2 1/16 2 3/16	1 7/8 2 1/4	1 0	—	1 0 0	485,131	Transvaal	120, Bishopsgte st Wn.
,, Est. & Dev.	1 1/16 1 1/16	1 1/16 1 1/16	1 0	—	1 0 0	428,600		10, New Broad-st. E C.
,, Gen. Assoc.	2 1/8 2 3/8	2 1/8 2 3/8	1 0	10/-Mar, 12 '96	1 0 0	185,000		30, S. Swithn's lane.
,, Gold Fields	3 1/8 3 3/8	2 3/8 3 1/8	1 0	8/- Apr. 15 '96	1 0 0	135,000	S. A. R.	120, Bishopgt-st. Wn
,, Land.....	7/16 9/16	7/16 9/16	1 0	—	1 0 0	79,915	Transvaal .	75, Abchurch Lane.
Treasury.....*G*	3 1/4 3	3 1/8 3 1/8	1 0	12 1/2 % Sep. '94	1 0 0	135,000	Rand.....	Warnford Court.
United Exploratn.	3/4 1	7/8 1 1/8	1 0	—	1 0 0	250,000	—	123, Bishopsgate St.
Un. Ivy Reef.....*G*	7/8 1	7/8 1	1 0	2 1/2 Jan. '94	1 0 0	45,000	Transvaal .	110, Cannon-street,
U. Langlaagte(N) *G*	1 1/8 1 3/8	1 1/8 1 1/8	1 0	—	1 0 0	146 000	Rand.....	85, Gresham Ho, EC
,, Pioneer.....	3/4 1	3/4 1	1 0	—	1 0 0	75,000	De Kaap ...	16, S.Helen's-pl., E.C
,, Rhodsa. G F	3/4 7/8	3/4 7/8	1 0	—	0 10 0	225,500	Rhodesia...	13, George street, EC
Van Ryn ..... *G*	5 3/4 5 7/8	5 3/4 5 1/4	1 0	4/- Jan. 16 '96	1 0 0	160,000	Rand.....	18, St. Swithin's-ln.
,, North ...	3/4 1	3/4 1	1 0	—	1 0 0	116,091	—	,,
,, West.....	3 1/4 3 1/2	3 1/4 3 1/2	1 0	—	1 0 0	120,000	Rand	,,
Venterskroon	3/4 1	3/4 1	—	—	1 0 0	125,000	Rooderand	8, Old Jewry
Vesta	1 1/4 1 5/8	1 1/4 1 3/8

"THE MINING JOURNAL" SHARE LIST—(Continued)

AUSTRALIAN AND NEW ZEALAND MINES.

Name.	Closing Price, May 8, 1896	Closing Price, Apr. 30, 1896.	Am't. of Share	When last XD and Dividend.	Called up per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
Achilles Gld Fld.	2/3 2/9	2/9 3/-	2/6	—	0 2 6	842,456	Otago, N.Z	11, Poultry.
Adelaide Lamp G	1⅝ 1⅝	1⅝ 1⅝	1 0	1/ Feb. 13 '96	1 0 0	100,000	W.Austral	4-6, Throg. Avenue.
Anglo-Con. G. Syn	2⅜ 2⅝	⅜ 2⅝	1 0	100 % '95	1 0 0	99,000	—	22, Austin Friars.
" Founders...	35 45	5 45	1 0	£24 16/8 2-5s'95	1 0 0	1,000	—	
" French Exp	¾ 1 pm.	¾ 1pm	1 0	5/- Oct 30 '95	0 10 0	40,000	W. Austral	79, Queen Street.
" Ger. Explor.	1⅛ 1⅛pm	1⅛ 1⅛pm	1 0	5/ Oct. 20 '95	0 10 0	50,000	"	"
Arrow BrownhillG	⅛ ¾	⅛ ¾	1 0	—	1 0 0	90,067	Cool.,W.A.	4, Gt. Winchester St.
Assoc. Gold Mines	1⅞ 2	1¾ 2	1 0	—	1 0 0	375,000	"	20, Bucklersbury
Australasian .....G	3/9 4/3	3/9 4/3	1 0	-/8 Mar.,'92	1 0 0	10,000	Gymp.Q'ld	6, Queen-st. place
Australian C	— —	— —	20 0	-/9 Aug. '95	7 7 6	218,315	S. Austral.	42, New Broad-street
Australian Bro. Hill Con.	/9 1/3	1/- 1/6	1 0	1/- June, '91	1 0 0	22,708	BarR.N.S.W	Winchester House.
Baker's Creek ...G	⅝ ⅞	⅝ ⅞	1 0	1/- May '95	0 17 6	500,000	H'gveN.S.W	Hillgrove, N.S.Wale
Barbec.....	⅜ ⅝	⅜ ⅝	1 0	—	1 0 0	160,000	W. Austral	43, Threadneedle st.
Bayley's Reward G	4/ 5/	4/ 5/	1 0	-/4 Dec. '94	1 0 0	480,000	Coolgardie	Fisb'y, H. Bl'mf'ld St.
Big Blow .....G	⅜ ⅝	¾ ⅞	1 0	—	1 0 0	150,000	"	15', Cannon Street.
Blackett's Claim G	⅜ ½	⅜ ½	1 0	—	1 0 0	55,000	"	16, St. Helen's Place.
Black Flag Consld.	1⅜ 1⅝	1⅛ 1⅜	1 0	—	—	—	W. Austral	4, Bishopsgate St Wn
" Prop'ty.	⅜ ⅞	11/16 13/16	1 0	—	1 0 0	140,000	Coolgardie	1, Metal Exch. Bldgs
Bognores Freehld	3/9 4/3	4/- 4/6	2/6	—	0 2 6	500,000	Corom.N.Z	Dashwood House.
Bonnie Dundee G	6/ 7/	6/ 7/	1 0	—	0 18 6	120,000	C.T.Q'land	16, S. Helen's Place
Bonnie Dundee ....G	13/16 15/16 xd	13/16 15/16xd	2 0	-/9 Apr.27, '96	2 0 0	250,000	"	Charters Towers.
Brilliant..... Block ...G	15/16 1	1⅛ 1⅜	1 0	-/6 Dec 16 '95	1 0 0	70,000	"	16, S. Helen's Place
" St. Geo.G	1 1⅛	1⅛ 1⅜	10/	/9 Apl. 15 '96	0 10 0	72,000	"	Charters Towers.
Brunswick Hill S	1 15/16 1 15/16	1¼ 1 5/16	1 0	—	1 0 0	240,000	N.S. Wales	Dashwood Ho., E.C.
Broad Arrow	2/3 2/9	2/3 2/9	5/	—	0 4 6	100,000	W.Feather	57, Moorgate Street.
Broken Hill Prop.S	2 5/16 2 7/16	2 5/16 2 7/16	8/	1/- Apl. 15 '96	0 8 0	960,000	N.S.Wales	3, Gt. Winchester st.
Brookfield Proctr.	⅝ ⅞	⅞ ⅞	1 0	—	1 0 0	125,000	"	4, Gt. Winchester st
Brunswick Brkd'y	1⅜ 1¾	1¼ 1⅜	1 0	—	1 0 0	150,000	Coolgardie	Copthall House.
Caledonian .....G	1/8 2/8	1/6 2/8	1 0	—	—	120,000	W. Austral	Portland House.
Caraby Hill .....G	15/16 1 1/16	1 1/16 1 3/16	1 0	—	1 0 0	115,000	Coolgardie	9-10, King Street, E.C
Central Bounser G	15/16 15/16	15/16 15/16	1 0	—	1 0 0	93,522	K'lg'rl.,WA	Wor'st'r Ho.,Walbr'k
" Exp. & Invst.	9/16 5/16 dis	— 1/16dis	1 0	4-8d Mar 12'96	— —	—	W. Austral	1, Met. Exchg. Bldgs
" of W.A.	1 1⅛	1⅛ 1¼	1 0	1/7½Mar 27 96	1 0 0	122,000	W. Austral	2, "
Charters Tow. ...G	1/ 1/8	1/ 1/6	10/	—	0 9 6	200,000	Queensland	110, Cannon Street
" Consolid....	/6 1/	/6 1/	10/	—	0 9 6	300,000	"	110, "
Colonial Finance...	4 4¼pm	4 4¼pm	1 0	10/ Mar. 27 '96	0 10 0	21,140	W. Austral	139 "
" Gold Fields	⅜ ⅝pm	¼ ⅜ pm	1 0	—	0 12 6	75,250	"	70, Cornhill,
Con.G.M. of W. A.	1/16 3/16	⅛ ⅜	1 0	—	1 0 0	246,779	Pilbarra ...	30, Moorgate Street,
" Murchison	⅜ ¾	11/16 13/16	1 0	—	1 0 0	225,533	Murc.,W A	Broad Street House.
Coolgardie & W.A. Trust	1 1⅛	1 1⅛	1 0	—	1 0 0	104,467	W. Austral	Broad Street House.
Coolgardie Gold ...	1 1/16 1 3/16	1⅛ 1⅜	10/	1/ Feb. 18 '96	0 5 0	90,000	Cool.W.A.	Broad Street Avenue
" Mint & I.Kg.	⅝ ¾	1⅛ 1⅜	1 0	—	1 0 0	150,000	"	30, S. Swithin's ln.
Crown Cal. ... G	1/6 2/6	1/6 2/6	5/	-/3 June 94	0 4 8	100,000	Queensland	30-1, S. Swithin's-le.
Croesus So. United	2 3/16 2 5/16	2 2⅛	1 0	—	1 0 0	115,000	Hann's WA	Blomfield House
Crown United.....	1½ 1⅝	1 1/16 1 3/16	1 0	—	1 0 0	75,000	—	110, Cannon-st., E.C.
Cumberland (New)G	/9 1/3	/9 1/3	1 0	2/6 Dec. '87	0 19 0	184,990	Queensland	Blomfield House.E C
Day Dawn B.A.W.G	12/3 12/9	12/ 12/6	1 0	-/8 Mar 12 '96	1 0 0	498,400	"	16, S. Helen's Place
" P. C. G	2/9 3/3	2/9 3/3	1 0	-/6 Apr, '92	1 0 0	490,000	"	Winchester Ho..E C
Eaglehawk.....G	1/ 1/8	1/6 2/6	1 0	—	0 18 0	120,000	Victoria ...	71-72, King Wm. St.
Eagle's Nest.....	par ¼ pm	par ¼ pm	1 0	—	1 0 0	72,500	Mt.Margrt	Finsbury House.
Explorers Synd. ...	par ¼pmxd	pa ¼ pmxd	1 0	—	0 5 0	9,000	W.Austral	Copthall House
Fingall k'ls. Extd	9/16 11/16	⅝ ¾	1 0	1/4 Jan. 16 '96	1 0 6	150,000	"	4, Sun Court
Florence.....G	2 5/16 2 7/16	1⅜ 1⅝	1 0	—	1 0 0	60,000	"	18, St. Swithin's ln
Gibraltar Cons.....	1 5/16 1 7/16	1 5/16 1 1/16	1 0	—	1 0 0	300,000	N S Wales.	6, Queen-street-place
Gladstone	⅞ 1⅛	⅞ 1⅛	1 0	—	1 0 0	—	W. Austral	43, Threadneedle st
Glenrock	1/8 2/3	1/9 2/3	1 0	—	0 8 0	225,000	N. Zealand	3-5, Queen-st. E.C.
Golden Cement G	5/16 7/16pm	5/16 5/16pm	1 0	—	0 10 0	—	W.Austral	79, Queen Street, E.C.
" Crown... G	2¾ 2⅞	2⅞ 3	1 0	—	1 0 0	100,000	"	77, Bishopsgate-st.
" Gate..... G	/6 1/8	/6 1/6	10/	—	0 10 0	150,000	Queensland	34-36, Gresham-st.
" Horse shoe...	1⅝ 1¾	1 9/16 1 11/16	1 0	—	1 0 0	—	W.Austral	13. Helen's Place
" Link ..... G	1 1/16 1 3/16	1 1/16 1 1/8	1 0	5/- Oct 30 '95	1 0 0	90,000	"	9-10, King Street, E.C
" Plum..... G	1 5/16 1 7/16	1 5/16 1 7/16	1 0	—	1 0 0	120,000	"	4, Bishopsgate Street
Gold Estates.....	2⅜ 2⅝	2 5/16 2 7/16	1 0	3/ Dec 30 '95	1 0 0	80,000	"	20, Bishopsgate-st Wn
Great Boulder ...G	9⅜ 9⅞	9⅜ 9⅝	1 0	2/- Mar. 27 '96	1 0 0	240,000	Yilgarn ...	3, Gracechurch st.
" " Junction	1⅜ 1⅝	1⅜ 1⅝	—	—	—	—	"	Worc. Ho., Walbrook
" " Mn k'ls	1⅜ 1⅝	1 5/16 1 9/16	10/	—	0 10 0	240,000	—	3, Princes Street.
" Pingall k'ls.	1 1⅛	1 1/16 1 3/16	1 0	8% Jan. 16, 96	1 0 0	175,000	Kurnalpi	Broad Street House
Graham Synd. ..	⅜ ⅝ pm	¾ 1pm	1 0	4/- Oct 30 '95	1 0 0	50,000	W. Austral	13-14, Abchurch ln.
Halesmith	1⅞ 2⅛	1⅛ 1⅝	—	—	—	—	—	82, Gordon st., Glas.
Hampton Gold Fids	⅜ ¾	⅛ ¾	1 0	—	0 10 0	—	—	9, S. Mildred's Ct.
" Gold Hill	/6 1/	-/6 1/-	1 0	—	—	—	—	93-94, Gracechurch st
" Plains...	5 5½	4 15/16 4 15/16	1 0	—	1 0 0	300,000	Cool. W.A.	29, S. Swithin's lane
" Plains Ex	8/6 9/6	8/6 9/6	1 0	—	0 18 0	180,000	"	Suffolk House, E.C.
Hannan's Brown Hill	6⅞ 7⅛	7⅜ 7⅝	1 0	—	1 0 0	65,000	"	Broad Street House.
" Main Reef...	9/6 10/6	9/6 10/6	10/	—	0 10 0	—	Kalg.W.A.	18, St. Swithin's ln.
" North.....	1 1/16 1 3/16	1 1/16 1 3/16	1 0	—	1 0 0	51,107	"	23, Cornhill.
" 100 Acre.....	¾ 1	¾ 1	1 0	—	—	—	"	Dashwood House,
" Oroya	1¾ 1⅜	1¾ 1⅜	1 0	—	1 0 0	—	"	20, Bucklersbury
" Prop.	1⅞ 2	1 11/16 1 15/16	1 0	—	0 10 0	—	"	139, Cannon Street.
" Reward .. G	3⅞ 4⅛	3⅞ 4⅛	1 0	—	1 0 0	70,000	Hann.WA	Bartholomew Ho,
" Star.....	1 5/16 1 7/16	1⅝ 1¾	1 0	—	1 0 0	—	E.Coolgde.	Finsbury HouseE.C
Hannibal..... G	13/8 14/8	14/ 15/	2/6	1/ Mar. 27 '96	0 2 6	250,000	Coromndl.	Dashwood Ho., E.C
Hawk's View	⅛ ⅜	⅛ ⅜	1 0	—	1 0 0	40,000	W. Austral	71-72, King Wm. St.
Hit or Miss	1¾ 1⅞	1 11/16 1 13/16	1 0	—	1 0 0	120,000	Cool.,W.A.	1, Queen Vic. St.
Idaho .....GS	4/6 5/8	5/ 5/6	10/	-/6 Jan.,16 '96	0 5 0	143,439	W. Austral	Copthall House.
Iatoonga .....G	1/ 1/8	1/3 1/8	10/	—	0 8 9	249,250	Queensland	70-71, Bishopsgate st
Ingurli.....	1⅝ 1¾	1⅝ 1¾	1 0	—	1 0 0	34,000	W. Austral	20, Threadneedle-st
Iqunga.....G	14/9 15/3	14/ 14/6	1 0	rts May 24 '95	0 19 6	249,760	N.Zealand	9, New Broad-street.
Kimberley (New)...G	7/6 8/6	7/6 8/6	1 0	—	0 18 0	80,340	Murchison	33, Broad-st. Avenue
Kintore	¾ ⅝ pm	¾ ⅝pm	1 0	—	0 15 0	44,000	W. Austral	13, Abchurch lane.
Kohi-noor Reefs	5/9 6/3	5/9 6/3	5/-	—	0 5 0	—	Hs'raki,NZ	Dashwood House.
Kurnalpi.....G	8/ 9/	8/ 9/	1 0	—	—	—	Coolgardie	Throgmorton House
Lady Loch.....	3⅞ 4	4 1/16 4 3/16	1 0	—	1 0 0	70,000	"	34-36, Gresham-st.
" Mary Amalg.	¾ 1	¾ 1	1 0	—	1 0 0	46,000	Murchison	Finsbury House.
" Stanton	2 15/16 2 15/16	2 5/16 2 5/8	1 0	—	1 0 0	—	—	18, St. Swithin's ln
Lee View & E. Bldr	4¼ 4⅝	4¼ 4⅜	10/	-/6 Jan. 2 '96	0 7 6	—	—	90, Cannon Street.
Limerick	1 1/16 1 3/16	1⅛ 1¼	1 0	—	1 0 0	52,537	Coolgardie	Leadenhall Buildgs.
Lo. & Con. Invest.	⅛ 3/16 pm	⅛ 3/16 pm	1 0	—	1 0 0	500,000	W. Austral	79, Queen Street.
Lon. & Globe Fin.	3 1/16 3 3/16	3 1/16 3 3/16	1 0	rts Mar. 27 '96	0 15 0	—	"	15, Austin Friars.
Londonderry.....G	7/ 8/	7/ 8/	1 0	—	1 0 0	467,000	"	3, Gracechurch-st.
Lyd. W. Aust. Explt.	2 15/16 3 1/16	2 2⅛	1 0	4/-Nov 29 '94	1 0 0	270,100	"	Broad Street Ho.
Lyn. W. A. Invest.	2 5/16 2⅜	2⅜ 2⅝	1 0	4/ Oct 16 '95	1 0 0	100,000	"	"
Mainland Cons. G	2 15/16 3 1/16	2 15/16 3 1/16	1 0	—	1 0 0	150,000	Murchison	54 Old Broad Street
Malvern's Reward.G	9/16 11/16	⅜ ¾	1 0	—	1 0 0	60,000	"	28 & 29, S. Swithin's ln
Manilla Gold Est.	1 1⅛	1 1⅛	1 0	—	1 0 0	—	"	Broad Street House
" Gold Reef	1⅜ 1⅝	1⅜ 1⅝	1 0	—	1 0 0	175,000	"	28a, Old Broad Stree
" (O'Driscoll)	1⅜ 1⅝	1⅛ 1⅜	1 0	—	1 0 0	—	"	16, Tokenhouse Yard
Mile Day Dawn G	¾ ⅞	15/16 15/16	1 0	-/8 Aug 29 '95	0 15 6	300,000	Queensland	16, S. Helen's Place
Miranda .....G	3/6 4/8	3/6 4/6	1 0	—	0 19 0	135,000	N.S. Wales	Bishopsgate House
Mount Lyell.....	5⅜ 6⅛	5⅜ 6⅛	3 0	—	3 0 0	300,000	Tasmania	Finsbury House
Mount Margaret...	2⅜ 2⅝	2⅜ 2⅝	1 0	—	1 0 0	—	W. Austral	28, St. Swithin's ln.
" Morgan G	3⅝ 3⅞	3⅝ 3⅞	1 0	-/8 Mar 12, '96	0 17 6	1,000,000	Queensland	9, Gracechurch-st.
" Rowe	1 5/16 1 7/16	1 5/16 1 7/16	1 0	—	1 0 0	75,000	Coolgardie	44, Coleman Street
Murchison N. Ch'm	8/6 9/	8/6 9/6	1 0	1/- Oct 30 '95	1 0 0	160,000	"	23, College Hill.
Nevill's Hauraki Props	4/9 5/3	5/3 5/9	5/	—	0 5 0	2,000,000	Ha raki,NZ	Dashwood House.
" Queen ..... G	8/9 9/3	7/3 7/9	1 0	-/6 Sep 12 '95	0 13 6	188,915	Queensland	71-72, King Wm. St.
Newman	1 5/16 1 7/16	1⅜ 1⅝	1 0	—	1 0 0	200,000	Dundas ...	30, S. Swithin's lane
North Boulder.....	12/ 13/	10/9 11/3	10/-	—	0 10 0	—	W. Austral	18, Helen's Place
" Coolgardie ...	1/ 1/6	1/ 1/6	5/	—	0 4 0	400,000	Pilbarra ...	225, Winchester Ho,
" Kalgurli	⅝ 1	1 1⅛	1 0	—	1 0 0	—	—	11, Abchurch lane
Old. & Agency (Aus. in G M Assoc	⅜ 1	¾ 1	1 0	—	1 0 0	—	—	10 New Broad Street
Paddington Cons.	1 5/16 1 7/16	1 5/16 1 7/16	1 0	30 % Aug. '95	1 0 0	90,000	Queensland	Broad-street House
Pharos G. F.	1 5/16 1 7/16	1 1/16 1 3/16	1 0	—	1 0 0	80,000	—	77, Bishopsgate-st.
" nage Syndicate	3¾ 4	3¾ 4	1 0	£2 Arts F.13 96	1 0 0	100,000	Pilb, W. A.	38, Coleman-street.
Royal Oak	1/6 2/	1/9 2/3	5/	—	0 3 0	50,000	W. Austral	4, Bishopsgate-st.
" Sovereign ...	1¾ 1⅜	1¾ 1⅜	1 0	—	1 0 0	200,000	N. Zealand	Dashwood House.
Shelbara	13/ 14/	13/- 14/-	1 0	—	1 0 0	60,000	Coolgardie	5, Old Jewry, E.C.
Smith's Australian	⅜ ⅝	⅜ ⅝	1 0	-/3 Aug., '95	1 0 0	25,000	"	Broad Street Avenue
Solly's Hauraki...	2/9 3/3	2/9 3/3	5/-	—	1 0 0	200,000	N. S. Wales	Winchester Ho. E.C.
South Kalgurli	⅞ 1	⅞ 1	1 0	—	0 2 0	400,000	N. Zealand	5, Drapers gardens
Stray Shot & Excel	¾ 1	¾ 1	1 0	—	1 0 0	60,000	W. Austral	13, Great Win. St.
Tavern.....	4/ 5/	4/ 5/	10/	—	1 10 0	—	Pilb., W A	30, S. Swithin's lane.
Tesdale of Hauraki	1/8 2/	1/6 2/	5/	—	0 5 0	90,000	N.Zealand	Dashwood House,
Town Prop. of W A	1⅝ 1¾	1⅝ 1¾	1 0	—	0 3 0	—	"	63, New Broad St.
True Blue	1⅜ 1⅝	1 9/16 1 5/8	1 0	—	0 15 0	250,000	W. Austral	28-9, S. Swithin's-ln
Victory..... G	2/3 2/9	⅝ ⅝	5/	-/3 May, '94	1 0 0	—	"	Dashwood House.
Wahl.....	6¾ 6⅝	6¼ 6⅜	5/	2/- Mar 12, '96	0 5 0	40,000	Queensland	32, Gresham-st., E.C
" Riverton	3⅞ 4⅛	3 15/16 4 1/16	1 0	—	1 0 0	181,000	N. Zealand	11, Abchurch-ln. E.C
Waiotahuri	4⅛ 4¾	4⅜ 4⅝	1 0	—	1 0 0	60,000	"	23, College Hill
" Extended ...	8/ 9/	8/6 9/6	10/	—	0 10 0	136,000	"	"
Waitahi.....	10/ 11/	10/ 11/	10/	—	0 10 0	130,000	"	63, New Broad St.
Wake Trust Min.	⅛ ⅜	⅛ ⅜	1 0	—	0 10 0	100,000	Crydn,N Z	43, Threadneedle st
W. of Nations.....	1 5/16 1 7/16	1⅜ 1 7/16	1 0	—	0 15 0	—	W. Austral	Broad Street House
Wentworth ....G	1 1⅛	1 1⅛	1 0	1/- Apl 15 '96	1 0 0	120,000	"	77, Bishopsgate-st.
W. A. Develop'n.	1 1⅛	1 1⅛	1 0	—	1 0 0	500,000	N. S Wales	4-6, Throgmort. Av.
W Aust. G.Concess	1 1⅛	1 1⅛	1 0	—	1 0 0	50,000	—	49-53, Moorgate court,
W. A. Rz. & Fin.	1⅝ 1¾	1⅜ 2	1 0	2/- Sept 27 '95	1 0 0	455,000	W. Austral	33, Old Broad st., EC.
Wiluna	8 5/16 8 7/16	8 5/16 8 7/16	1 0	rts Mar. 27 '96	1 0 0	200,000	"	84,

AUSTRALIAN AND NEW ZEALAND MINES—(*Continued*).

Name	Closing Price, May 8, 1896	Closing Price, Apr. 30, 1896	Am't. of Share	When last XD and Dividend	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
W. A. General.....	3¾ 4	3¼ 4	1 0	—	0 14 0	—	W. Austral	28, St. Swithin's-ln.
" Australian G.F.	7⅞ 8⅛	7¾ 8	1 0	rts Mar 12 '96	1 0 0	65,000	Coolgardie	28-9, "
" " Mines Dvl	1½ 2pm	1½ 2 pm	1 0	10/ Oct 30, 95	1 0 0	40,000	W. Austral	3, Princes Street
" Aust. Mining	9/3 9/9	9/5 9/9	5/	7½d. Mar. 27'96	0 5 0	320,000	"	457, Winchester Ho.
" Aust. Pioneer.	2¾ 2¾ pm	2 2¾pm	1 0	rts Oct 19 95	0 15 0	19,993	"	179, Cannon-street,
" " Share Corp.	⅜ ⅞ pm	⅝ ¾ pm	1 0	—	0 5 0	200,000	"	23, St. Swithin's ln
" " Venture.....	2¾ 2⅞ pm	1¾ 2¼ pm	1 0	15/ Oct. 30 '95	1 0 0	—	"	2, Princes Street.
West Boulder	⅞ 1	⅞ 1	—	—	—	—	—	
White Feather ...	2 1/16 2 3/16	2⅜ 2⅝	1 0	—	1 0 0	60,000	Coolgardie	28 & 29, S. Swithin's ln
Zapopan.....G	4/ 5/	3/ 4/	1 0	—	1 0 0	25,000	N W Austra	70, Bishopsgate-street
Zeehan Montana S	— —	— —	1 0	-/4 Dec. 95	1 0 0	66,000	Tasman a	11, Queen Victoria st
" " ...	— —	— —	1 0	2½ Dec. 95	0 2 6	12,000	"	"

NORTH AMERICAN MINES.

Alaska Mexican...G	1½ 1¾xd	1½ 1¾xd	$5	4 4-5d. Feb.,'96	$5	160,000	Ala ka.....	30, St. Swithin's-ln
" Treadwell G	5¾ 5¾xd	5½ 5¾xd	$25	1/6 Dec 24, '95	$25	200,000	"	"
Anaconda C	6 5/16 6 7/16xd	6¼ 6⅜	—	—	—	—	—	
Anglo Mexican ...S	¾ ⅞	¾ ½	5 0	1/- Apr. 15 96	5 0 0	74,850	"	23, College Hill.
Arizona (Pref.) Cu	58/9 57/	57/9 56/3	4 0	1/6 Feb. 13,'96	4 0 0	158,920	Arizona...	74, Geo.-st., Edinbor
" 6½ A Deben.	113¾ 113½	112	100 0	½ % Oct.20 '95	100 0 0	£135,300	"	"
" 7% B Deben.	103 103¾	103	100 0	7% Oct. 30 '95	100 0 0	£181,300	"	"
De Lamar.....GS	15/6 16/6	17/6 18/6	1 0	1/- Feb. 13 '96	1 0 0	400,000	Idaho.....	6, Drapers-gardens.
Dickens Custer GS	-/9 1/3	-/9 1/3	1 0	—	0 19 9	420,000	"	Winchester Ho. E.C.
Doric..... .....G	8/ 8/6	8/ 8/6	5/	—	0 5 0	125,000	Colorado...	
Elkhorn Priority S	⅛dis ⅛ pm,	⅛dis ⅛pm	1 0	-/3 June 26 '95	0 10 0	175,000	Montana	6, Draper's-gardens.
Gen. M'g. Assoc, ...	6¾ 7¼	6¾ 7¼xd	5 10	14/-Apr. 26 '95	5 10 0	27,469	C. Breton	Blomfield House
Golden Feather G	⅜ ⅝	⅜ ⅝	1 0	—	1 0 0	180,000	California	St. Stephens Ca E.C.
" Gate .....G	3/- 4/-	3/ 4/	1 0	—	0 19 6	79,600	"	"
" Leaf..... G	1/- 1/6	1/ 1/6	1 0	—	1 0 0	300,259	Montana	8, Draper's Gardens.
Harquahala... .. G	2/8 3/6	3/6 4/6	1 0	-/6 Nov. 14, '94	1 0 0	300,000	Arizona ...	6, Draper's Gardens.
Holcomb Valley G	-/6 1/	/9 1/3	5/	—	0 5 0	540,000	California	14, Cornhill, E.C.
Jackson Goldfields	/6 1/-	/6 1/-	5 0	—	0 5 0	408,635	"	11, Poultry, E.C.
La Plata.....S	1/ 1/3	1/ 1/3	5/	1/3 Oct. '82	0 4 6	405,000	Colorado	11, Poultry, E.C.
La Yesca .....GS	3/3 3/9	3/6 4/6	1 0	—	0 19 6	200,000	Mexico ...	20, Bucklersbury, EC
Lyonnaise Mexican	⅛ ¾	⅛ ¾	1 0	—	1 0 0	140,000	"	3, Broad St. Bldgs.
Montana..... GS	7/3 7/9	6/3 8/9	1 0	-/3 Mar 27 '96	0 19 0	657,158	Montana	Gresham House, E.C.
New Guston .....S	⅛ ⅜	⅛ ⅜	1 0	1/- Oct. '92	1 0 0	110,000	Colorado	25A, Old Broad-st.
Palmarejo .....GS	2/- 2/6	2/5 2/9	1 0	—	1 0 0	418,888	Mexico ...	32, Old Jewry, E.C.
Pinos Altos (Df) GS	⅛ 3/16	⅛ 3/16	1 0	-/6 Mar.' 90	1 0 0	100,000	"	110, Cannon-street.
Richmond ...GSL	⅜ 1⅛	⅜ 1⅛	5 0	1/- Dec. 16 '95	5 0 0	54,000	Nevada ...	44, Coleman-street.
St. George.....	1/ 2/	1/ 2/	5/	—	0 4 9	—	G o'gia USA	8. Geo Ho., E'cheap
Sierra Buttes ...G	1/16 1/16xd	1/16 1/16 xd	2 0	-/3 Apr. 29 '96	2 0 0	122,500	California	133, Leadenhall-st.
" Plumas Eur. G	⅛ ⅛xd	⅛ ⅛xd	2 0	-/9 Apr. 29 '96	2 0 0	140,265	"	"
Springdale.....G	/10⅛ 1/1⅛	/10⅛ 1/1⅛	$1	-/2 Sep. 28, 9	$1	1,000,000	Colorado	20, Abchurch Lane.
Twin Lake Placers	1 1¼	1 1⅛	1 0	3/- Feb. '95	1 0 0	25,000	"	5, Lawrence P. Hl. E

SOUTH AND CENTRAL AMERICAN MINES.

Anglo-Chilian Pf N	10⅛ 11	10⅛ 11	10 0	7/0 Feb. 27 '96	10 0 0	35,000	Antofagst.	123, Bishops,-st. W
" 6% Ry 1st MB	108 110	108 110	100 0	6% Jan. 2 '96	100 0 0	£200,000	"	"
Argen. Concessions	1/8 2/.	1/8 2/	2/	—	0 2 0	150,000	S. Luis ...	3 & 5, Queen Street.
Caratal..... G	/8 1/	-/8 1/	2/8	—	0 2 6	1,330,000	Venezuela	57, Moorgate-st. E.C
Cayiloma.....S	15/16 1 1/16	⅜ ⅞	2 0	1/- Apr. 94	2 0 0	125,000	Peru	52, Leadenhall street
Colon .....G	-/3 /9	-/3 /9	5/	—	0 4 0	200,000	Colombia	5, Copthall-bdgs., E.C
Colorado Nit: ...N	1⅛ 2	1⅛ 2	5 0	2/6 Dec. 16, '95	5 0 0	32,000	Chili	12, King-st., Liverp'l
Colombian Hy...G	⅜ ⅝	7/16 9/16	1 0	1/- Jy 26, '95	1 0 0	75,000	Colombia	10, Blomfield-street
Copiapo C	2½ 2¾	2 2⅛	2 0	2/6 Dec. 16 '95	2 0 0	100,000	Chili	Dashwood House, E.C
Darien "A" .....G	7 7¼	7 7¼	1 0	—	1 0 0	49,553	Colombia	Manchester.
" "B"	8½ 9xn	8½ 9xn	1 0	x.nw Apr 29 '96	1 0 0	133,102	"	"
Don Pedro.....G	1/ 1/8	1/ 2/	1 0	—	1 0 0	"	Brazil.....	24-5, Devonsh. Cs E.C
El Callao .....G	⅜ ⅝	⅜ ⅝	5 0	9½d. Feb. '94	5 0 0	257,600	Venezuela	8, Bishopsgt.-st, Wn
Frontino & B....G	15/16 1 1/16	15/16 1 1/16	1 0	6d. Jan. 16 '94	1 0 0	128,662	Colombia	184, Gresham House
Glenrock .....G	1/9 2/3	1/9 2/3	1 0	—	1 0 0	199,948	Arg. (& I.)	3-5, Queen-street, E.C
Gravel.....G	1/6 2/6	1/6 2/6	1 0	—	1 0 0	100,000	Colombia	10, Blomfield-street
Guadalupe .....GS	3/6 5/-	3/6 5/	1 0	—	1 0 0	120,000	Honduras	1a, Union ct. Old Brd
Julia

THE FORD AND MONCUR HOT-BLAST STOVE.*

By BENJAMIN JAMES HALL.

The writer's apology for presenting this paper must be found in the fact that, whilst the descriptions and illustrations of the Cowper, Whitwell, and Crooke types of hot blast fire brick stove are to be met with in the pages of the Journal of the Iron and Steel Institute, no such detailed information is available therefrom regarding the Ford and Moncur patent, a type, the results of which have been so uniformly excellent during the 12 years which have passed since the first stoves were put to work, that it is daily growing in favour, and some of the most successful companies in this country are working their furnaces exclusively with stoves of this construction.

The brickwork is enclosed in the usual air tight cylindrical casing of wrought iron or mild steel plates. The crown plate of the dome is attached with bolts and nuts, and forms a manhole lid, the only provision now made for obtaining access to the internal structure from the upper part of the stove. A minimum space of ½ inch is allowed for expansion between the casing and brick lining. The combustion chamber is rectangular, and extends transversely the full width of the stove. In the upper part is an auxiliary regenerator, formed of a 9 inch and 4½ inch walls carried on brick arches and special tiles, leaving parallel passages about 18 inches by 12 inches. The semicircular spaces on both sides of the combustion chamber are filled with regenerative brickwork, consisting of parallel walls 2½ inches thick, built dry, and he'd in position by stays of elliptical section with square ends, spaced zigzag. Each semicircular space is divided into two equal portions by a cross wall 14 inches thick extending from the base to the top of the stove, and uniting with the central division wall of the auxiliary regenerator; one-half of this latter is thus common to two main regenerative compartments. Below the grids carrying the division walls in each compartment is a vacant space communicating with the central flue leading to the chimney valve, through an opening formed in the division wall, in which is fixed an internal valve operated from the outside of the stove by screw and hand wheel. These four valves constitute a feature in the arrangemant, for by them the quantity of air passing through any of the compartments can be controlled at pleasure, and the blast may be regulated to maintain an approximately constant temperature throughout a two hours' blow, if at the commencement of blowing two or more compartments be shut off and held in reserve, to be gradually brought into action as the temperature begins to fall. With all the valves open, the fall in temperature in a two hours' blow seldom exceeds 60° F., and in consequence this method of working is never adopted. In Cumberland the blast furnaces are usually worked at 1350° to 1400° F., and the stoves at 1500° F. The temperature is regulated to suit the requirements of the furnace by adjustment of a cold blast valve placed close to the circular main.

At the end of the central flue is a balanced mushroom valve similar to that generally in use, by which connection is made with the chimney flue. The instantaneous valve immediately in front has a butterfly flap hung eccentrically, and so placed that when exposed to a pressure from the inside of the stove, it flies open automatically as soon as the catch holding it in closed position is disengaged. Cold blast is admitted to the central flue in front of the instantaneous valve.

The gas supply, governed by a mushroom valve, passes along passages parallel with the combustion chamber and enters therein through the lower series of graduated openings. The air supply is regulated by two valves at opposite sides of the stove, and enters the combustion chamber through the upper series of graduated openings. In the majority of cases these air-regulating valves are situated on the same side, but nearer the base of the stove than shown on the diagrams, and on opposite sides of the combustion chamber, vertical air passages being provided in the brick lining.

After passing through the auxiliary regenerative chamber, the current of heated gases is distributed over and flows downwards through the main regenerative chequer-work, passing from thence through the internal valves to the chimney flue. The tops of the walls are canted, and the stay-bricks are designed and set in such a manne as to present no horizontal surface on which dust brought in by the furnace gases may accumulate. In addition to this, dust is as far as possible expelled by a strong current of air, to effect which, at each change from blast to gas, the stove being then filled with air at blast pressure, three of the internal valves, the hot blast valve, cold blast valve, air valves, and instantaneous valve are closed, the chimney valve is raised, the catch holding the eccentically hung flap of the instantaneous valve in closed position is released, and the pressure on unequal areas causing it to open, the blast is suddenly discharged to the chimney flue, the whole of the imprisoned air passing through one regenerative compartment, the valve leading to which has been left open, and carrying with it all the dust deposited on the brickwork during the time gas was on the stove. The rush of blast in this last compartment is downwards, and in the remaining three upwards. At the following change from blast to gas another compartment is dealt with, and so on in systematic rotation, every compartment getting a downward rush of blast when its special cleaning time arrives, and an upward rush when the other compartments are being cleaned. This alteration is of great import ance and practical benefit in the cleaning process.†

Where the gases are very dirty, it is usual and advisable to clean all four compartments consecutively at every change from blast to gas; the time occupied is only four minutes. Sluice valves are provided at the bottom of the gas passage and combustion chamber to admit of the dust collecting therein being periodically blown out.

This method of cleaning by discharge of the whole of the air under pressure in the stove, through the comparatively limited area of one regenerative compartment, has proved very effectual, and several stoves in connection with hæmatite furnaces using coke fuel have worked continuously for about five years since their erection, and are still at work without once having been laid off for cleaning.

The first stoves erected at Distington Iron Works have been in use for upwards of 12 years without costing 1d. for brickwork repairs to the internal structure.

Notwithstanding the precautions which are taken to prevent accumulation of dust, it would be a mistake to suppose that the Ford and Moncur stove never requires to be stopped for cleaning; no such perfection has been attained, but it is an established fact that by careful attention to the simple and efficacious method of self-cleaning, these stoves may be run continuously without appreciable loss of power for the ordinary life of a blast furnace lining. When laid off, it is as simple to brush the sides of the stay bricks as it is to cleanse in the same manner the vertical passages of any other type of stove. Each regenerative compartment is divided into 16 sections by walls 2½ inches thick, in the greater number of which there are at least five openings of about 50 square inches sectional area each at the narrowest place between the top rows of stays. The blast or gas can enter by any one of these openings throughout the whole section; thus no appreciable difference is made in the working of a stove by a passage or two becoming choked, so long as there remains a free inlet to each section, which is practically insured by the cleaning process.

The hot-blast valve shown is a cast-iron disc, with hollow cast-iron seat, through which a current of air circulates from the cold-blast main. Valves of this class work efficiently for considerable periods, and have been usually adopted with the Ford and Moncur stoves in preference to those with water-cooled seats.

At Sir Alfred Hickman's Springvale Furnaces a difficulty has been experienced, owing to the brick arches carrying the division walls of the auxiliary regenerator burning away, and allowing the parallel side walls of the chamber to close in. To obviate this, the manager, Mr. Moore, has introduced a combination of the Cowper and Ford and Moncur constructions.

This important modification consists of a stove having four regenerative compartments separated by the partition walls, and filled with Ford and Moncur chequer work. The combustion chamber is of the Cowper type, 6 feet diameter. At the base of the stove are four internal regulating and cleaning valves. This modification is worked in conjunction with Cowper stoves, have tile-filling 2½ inches thick, 6 inches square apertures; they are kept on gas for two hours, and on blast for one hour; the temperature at commencement of the blow is from 1350° to 1400° F., and about 1310° F. at finish. An internal examination is made once a year. No difficulty is experienced with the internal valves or the Ford and Moncur chequer work, and Mr. Moore finds that two stoves of the modified construction are, in their general working capacity, after equal periods of work, equal to three other stoves of the same diameter and height.

These were among the first erected under the patent, and have only recently been altered. It is fair to say that this is the only instance of failure of the combustion chamber brickwork which has come under the writer's notice, and this may possibly be accounted for by an unsuitable material having been used. In the writer's opinion, the rectangular combustion chamber gives the best distribution of gases over the chequer work. An arrangement with circular flame flue in the centre of the regenerative compartments is shown in the drawings accompanying the patent specification, and the Springvale modification is covered by the patent.

In 29 instances where Cowper stoves are used exclusively, 128 furnaces are provided with 241 stoves, or 1·88 per furnace. Although none of these are returned as discarded, many are old and of small capacity. Neglecting these, and taking 14 instances where Cowper stoves of recent date are used exclusively, 47 furnaces are provided with 68 stoves, or 1·4 per furnace. In seven instances where Whitwell stoves are used exclusively, 31 furnaces are provided with 91 stoves, or 2·9 per furnace. In four instances where Massicks and Crooke stoves are used exclusively, 12 furnaces are provided with 35 stoves, or 2·9 per furnace.

In eight instances where Ford and Moncur stoves are used exclusively, 45 furnaces are provided with 48 stoves, or 1·07 per furnace. These deductions are approximate only; it has been found impossible to distinguish between furnaces working and idle, and between those provided with an insufficiency or superabundance of heating apparatus. In addition, probably from 40 to 50 Ford and Moncur stoves are under six years of age, and the greater portion of large dimensions. Where the gases are clean, the working results of modern Cowper and Ford and Moncur of similar size are about the same, three stoves being found sufficient for two furnaces. The advantage which the Ford and Moncur construction possesses is that whilst it is unnecessary to provide spare stoves, this provision must be made where the Cowper stoves are fired with dirty gases, and further, the gases are better distributed over the Ford and Moncur chequer work, and the brick surface is more easily kept clean.

The writer calculates the heating surface of the stove illustrated as follows;—

	Square Feet.
Combustion chamber and auxiliary regenerator	7,320
Four main regenerative compartments and passages ...	58,680
Total	66,000

The cost of such a stove, erected complete, with internal brick structure and all mountings, but exclusive of foundations and connections, is about £1600.

In conclusion, the writer desires to express his thanks to the numerous firms which have supplied information regarding their stove plants; to Mr. Crawford, of Moss Bay Iron and Steel Company; to Mr. Moncur, of the Distington Iron Company; and to Mr. Marley, of the Workington Bridge and Boiler Company.

* From a paper read before the Iron and Steel Institute.

† The force of discharge is also increased by the partial vacuum in the chimney flue, and the increased pressure due to the expansion of the imprisoned air.

THE TREATMENT OF NEW ZEALAND MAGNETIC IRON SANDS.*

By E. METCALF SMITH,
Member of the House of Representatives, New Zealand.

THE principal iron sand deposit in New Zealand extends for about 13 miles along the sea beach at New Plymouth, in the Province of Taranaki. The sea cliffs on this part of the coast consist of a combination of silica sand and a rich magnetic iron sand. The gradual crumbling of these cliffs, together with the large quantities of iron sand brought down by the rivers and streams draining the slopes of Mount Egmont, result in a deposit of almost pure iron sand on the beach, a large proportion of the lighter silica sand being washed out to sea. Excavations have been made on the beach showing a depth of iron sand of 14 feet, and the removal of any bulk of sand from the beach is replaced by the action of incoming tides. Iron sand has been dredged up at a distance of 3 miles out to sea from this shore, proving that the deposit extends over a large area, and that the supply is practically inexhaustible.

This vast deposit of magnetic iron ore is in close proximity to exensive coal beds, limestone containing 88 per cent. of calcium carbonate, timber for charcoal, and every requirement for the manufacture of iron. The results of an analysis of Taranaki iron sand given by Sir James Hector, the eminent geologist, are as follows:—

Peroxide of iron } Protoxide of iron }	82·0
Oxide of titanium	8·0
Silica	8·0
Water and loss	2·0
	100·0

This, I believe, is the smallest proportion of tatanium combined with the largest proportion of iron found in any iron sand in the world.

By forming the iron sand in combination with certain clays into a compound brick and smelting it in a blast furnace, using the fluxes I will now describe, I obtain a soft grey pig iron containing by analysis 1 per cent. of titanium. From this is produced bar iron containing 0·21 per cent. titanium.

The compound, of which the composition is stated below, is well pugged, pressed into bricks which are hard and compact and stand the pressure and grinding action in travelling through the furnace. The silica and alumina protect the fine particles of oxide of iron from being burnt, and allow the iron sand to be treated as a rich compact iron ore.

Compound.

		Ton.	Cwt.	Parts of Titanium.
Pugged and pressed into bricks	160 parts iron sand ..	1	12	12
	25 „ blue clay ..	0	5	nil
	25 „ yellow clay	0	5	nil
	210 parts			

Fluxes.

25 parts limestone		nil
25 „	yellow clay	nil
25 „	sugar loaf rock	nil
20 „	lime and ashes residue from patent fuel	nil
305 parts		12 parts titanium

Reducing proportion of titanium to 3·6 per cent.

* A paper read before the Iron and Steel Institute last Thursday.

The yellow and blue clays used in the compound had the composition shown in the following analyses:—

Analysis of Tufa or Yellow Clay used in Compound.

Silica	41·000
Alumina	23·000
Manganese	traces
Oxide of iron	9·052
Lime	1·025
Water	24·014
Alkalies	2·000
	100·064

Analysis of Blue Clay or Papa Rock.

Silica	54·21
Alumina	31·64
Iron protoxides	8·96
Manganese	traces
Lime	1·60
Magnesia	1·42
Water	2·17
	100·000

In the year 1892 I smelted 45 tons iron from Taranaki iron-sand in a small blast furnace, using the method above described with entire success, the iron running freely, the tuyeres being clean, and only 2 to 3 per cent. of iron oxides being left in the slag.

The following are results of the analyses of the pig iron and bar iron smelted by the process:—

	Pig Iron.	Bar Iron.
Iron	94·09 ..	98·94
Manganese	traces ..	traces
Titanium	1·00 ..	0·21
Silicon	2·12 ..	—
Sulphur	0·02 ..	traces
Carbon	2·33 ..	0·46
Loss and substance not determined	0·44 ..	0·39
	100·00	100·00

The pig iron is fairly granular, and a fragment flattens out when struck on an anvil. The bar iron is very fine grained and malleable, and is of excellent quality.

The following method of treating the fluid metal will, I think, commend itself. Having smelted the iron sand, tap it into a ladle containing tarred iron sand in the proportion of 4 cwts. to each ton of crude metal. The liquid metal will melt and absorb the iron sand, and the tar will give sufficient carbon to retain the metallic iron in a fluid state. The metal so treated retains its greyness and fluidity, and if used for direct castings, there is a result of a gain in weight of 3 cwts. per ton instead of a loss of 3 cwts. per ton, as is the case when remelting pig iron for castings.

In making wrought or bar iron, the tarred iron sand compound can be added in the puddling furnace in the proportion of 50 per cent., and in making steel by the Siemen's open hearth furnace, 50 per cent. of tarred iron sand compound may be used, yielding, together with what was placed in the ladle, a clear gain of 10 cwts. per ton.

The cost of manufacture of pig iron, superior in quality to the best Scotch, is £2 7s. 3d. per ton made up as follows:—

	£ s. d.
Cost of fuel	1 4 0
Carriage, pugging, pressing, drying of compound iron sand clays ..	0 10 3
Fluxes	0 4 0
Labour	0 8 0
Sundries	0 1 0
	£2 7 3

By the special treatment described, bar iron equal in quality to the BBH, can be produced for £7 per ton. The manufactured wrought iron, when reduced with charcoal, stood the extraordinary tensil stress of 52 tons to the square inch.

Mokau coal yields on analysis the following results:—

Fixed carbon	54·0
Hydro-carbon	34·0
Water	10·0
Ash	2·0
	100·0

When passed through gas retorts, 1 ton Mokau coal, costing 13s. 4d. per ton at New Plymouth, will yield about 10,000 cubic feet of gas, which gas will do as much work in heating the puddling or steel furnace as 23 cwts. of raw bituminous coal, costing 20s. a ton in New Zealand. By taking the carboniferous residue from the gas retorts and mixing it in the following proportions, I obtain the patent fuel employed.

10 cwts.	Mokau coal residue	Pugged and pressed into bricks. Costing about 12s. per ton.
6 „	Raw bituminous slack coal	
2 „	Slag cement	
2½ „	Coal tar	
20½ „		

This forms a fuel of a first-class character for smelting purposes, being almost pure carbon, hard and dense; it lasts a long time, produces a very high temperature, clear and bright, with little or no flame.

An analysis of this patent fuel by Mr. W. Skey, Government analyst, gave the following results:—

Fixed carbon	59·76
Volatile matter	20·48
Water	0·72
Ash	19·04
	100·00
Evaporative power	7·80

The ash is obtained partly from the breeze and partly from the binding agent, the cement. After acting as a binding agent it is available as a flux.

There are various by-products obtainable from the slag in the form of bricks, slag cement, and slag blocks, all of which are of value in New Zealand.

The slag when ground is of value as a fertiliser. It consists, as shown by the following analysis, chiefly of lime and silica:—

Lime	40·0
Alumina	12·0
Silica	42·0
Magnesia	2·0
Titanium	1·0
Iron oxides	2·0
Alkalies	1·0
Manganese	traces
	100·0

WE learn that a dry process for the treatment of gold ores has been invented and patented by Mr. William Herbert Hyatt, F.C.S., a well-known chemical engineer and metallurgist.

GREAT BOULDER SOUTH GOLD MINING COMPANY (LIMITED).—Mr. Walter Bramall has been appointed secretary.

The SUBSCRIPTION LIST will OPEN on MONDAY, 11th MAY, 1896, and CLOSE at Four o'clock on TUESDAY, 12th MAY, for TOWN, and on WEDNESDAY MORNING, 13th MAY, for the COUNTRY.

THE Dunlop Pneumatic Tyre Company, Limited.

REGISTERED UNDER THE COMPANIES ACTS, 1862 TO 1890.

Share Capital - - - - - - - £4,000,000,

Divided into 1,000,000 £5 per Cent. Cumulative Preference Shares of £1 each (Preferential as to Capital as well as Dividend).

1,000,000 £8 per Cent. Cumulative Ordinary Shares of £1 each. 2,000,000 Deferred Shares of £1 each.

The above Shares are payable 5s. on application, 5s. on allotment, and the balance on 10th June, 1896.

DEBENTURES.

1,000,000 £4 per cent. Mortgage Debentures of £100 each, redeemable at the option of the Directors at £110 on giving six months' notice.

The above Debentures are payable, £25 on application, £25 on allotment, and the balance on 10th June, 1896.

TRUSTEES FOR DEBENTURES.

CHARLES WISDOM HELY, J.P., Oaklands, Rathgar, County Dublin.
ROBERT WATSON, Newfield, Johnstone, Renfrewshire.

DIRECTORS.

THE RIGHT HON. EARL DE LA WARR, Chairman.
HIS GRACE THE DUKE OF SOMERSET.
THE RIGHT HON. THE EARL OF ALBEMARLE.
*HARVEY DU CROS, Chairman and Managing Director of the Pneumatic Tyre Company, Limited.
*ARTHUR DU CROS, General Manager of the Pneumatic Tyre Company, Limited. } Managing Directors.
* Will join the Board after allotment.

BANKERS.

ENGLAND:—LLOYD'S BANK, LTD., 222, Strand, London And their Agents in
IRELAND:—THE BANK OF IRELAND, Dublin. } And ALL BRANCHES.

SOLICITORS.

JOHN B. PURCHASE, 11, Queen Victoria Street, London, E.C.
ARTHUR T. ASHWELL, Nottingham.

SOLICITORS FOR IRELAND.

GOODBODY & TISDALL, 30, College Green, Dublin.

BROKERS.

GEORGE WHITEHEAD & CHOWN, 23, Bucklersbury, London, E.C.
WILLIAM WILSON & SON, 36, College Green, Dublin.

AUDITORS.

TURQUAND, YOUNGS, BISHOP, & CLARKE, 41, Coleman Steet, London, E.C.

SECRETARY.

L. J. O'HIGGINS (Secretary, Pneumatic Tyre Company, Limited).

REGISTERED OFFICES.

160, CLERKENWELL ROAD, LONDON, E.C.

ABRIDGED PROSPECTUS.

This Company has been formed to acquire as a going concern the whole of the Assets and Undertaking known as

(1) THE PNEUMATIC TYRE CO., *Ltd.*

also

(2) THE CLINCHER PATENTS (Bartlett's Nos. 11800/89, 16348/90, 16783/90), including the License under Royalty granted under same to

THE PALMER TYRE, Ltd.

also

(3) THE WESTWOOD RIM PATENTS

(including all Plant and Machinery for manufacturing these Rims, now in possession of the CYCLE COMPONENTS MFG. CO., Ltd.:

Together with the Licenses under Royalty granted under same to
THE STAFFORD MANUFACTURING CO., *Ltd.*,
BARTON & LOUDON,
THE WESTWOOD MANUFACTURING CO., *Ltd.*

I.
PNEUMATIC TYRE COMPANY LTD.

The Business of The Pneumatic Tyre Company, Limited, was established in 1889. The following are the net earnings of the respective years:—

Year.	Profits from Premiums on New Issues.	Net Profits Earned
1890	—	£ 2,560 1 2
1891	£ 187 10 0	21,974 13 1
1892	10,040 0 0	48,595 5 5
1893	100,000 0 0	149,319 4 9
1894	—	157,183 17 2
1895	75,000 0 0	220,0 7 7 8
	£185,728 0 0	£599,740 14 3
		£185,228 0 6

Total Net Profits to September 30, 1895 ... ... £784,989 2 9
To which is to be added NET PROFITS FOR SIX MONTHS and 25 DAYS (that is from September 30th last to April 25th last) according to Balance-Sheet at per Auditor's Certificate below £215,985 6 0
TOTAL NET PROFITS TO APRIL 25th LAST ... £1,000,954 8 9

AUDITORS' CERTIFICATE.

We have examined the accounts of The Pneumatic Tyre Company, Limited, from the 30th September, 1895, to the 25th April, 1896, with the Books and Vouchers at the Head Office of the Company, and with the certified returns from the Managers of the various Branches, and have to report that in our opinion the above Balance-Sheet is properly drawn up so as to exhibit a correct view of the Company's affairs on the 24th April, 1896, and that the net profits of the Company for the said SIX MONTHS AND TWENTY-FIVE DAYS, hereby disclosed, are £215,985 6s. 0d.

Signed STOKES BROS. & PIM,
Chartered Accountants.

Dublin, May 7th, 1896.

II.
CLINCHER TYRE PATENTS (BARTLETT)
Nos. 11800/89 16348/90 16783/90.

These Patents have been purchased from the North British Rubber Company for a very large sum in Cash, and a working arrangement has been made under which the North British Rubber Company will continue to manufacture Pneumatic Tyres (Bartlett's Patent), but under a Royalty upon each tyre, payable to the Dunlop Pneumatic Tyre Company, Limited.

This arrangement, based upon the stated output of the North British Rubber Company for the current year, is expected to yield to the Dunlop Pneumatic Tyre Company, Limited, Royalties amounting to £25,000 per annum.

PALMER TYRE COMPANY'S LICENSE.

The purchase of the Clincher Patents includes the only license granted thereunder. This license has been granted to the Palmer Tyre Company, Limited, and provides for the payment of a Royalty on each Tyre, but the minimum Royalties must never fall below £3000 per annum, which will in future be payable to the Dunlop Pneumatic Tyre Company, Limited.

FURTHER ROYALTIES.

If deemed advisable, the Dunlop Pneumatic Tyre Company, Limited, will issue a license under the Clincher Patents to a third Company.

III.
THE WESTWOOD RIM PATENTS.

The Dunlop Pneumatic Tyre Company, Limited, will, from September next, manufacture Westwood Rims.

These patents have been acquired because the Pneumatic Tyre Company found the Westwood Rim to be far the most suitable type for combination with air tyres.

Hitherto the Company has purchased rims for its requirements in the open market, and although the Company's price lists included the cost of a solid rim, yet it has been the practice to make an abatement when customers provided their own rims.

In view of the Company's guarantee, it is now intended to supply a rim with each tyre manufactured, without the option of this abatement.

The Accountant of the Cycle Components Mfg. Company, Ltd., certifies that the profits upon contracts made for the current year by that Company alone, in respect of Westwood Rims, will produce £22,000.

In the hands of the Dunlop Pneumatic Tyre Company, Limited, the sale of these rims must enormously increase, and consequently the income derivable therefrom will be very considerable.

Full Prospectuses, which will be advertised in Monday's papers, can be obtained at the offices of the Company, or of its Bankers, Brokers, and Solicitors.

REPORTS FROM THE MINES.

BRITISH MINES.

WEARDALE LEAD.—Report on Weardale Company's Mines for the week ending May 2: Groverake, 60 fathom level east, sparry vein, continues poor in ore, end worth 4 cwts. per fathom. Mac's level west unchanged. Tribute ore for the week returned at 14½ bings.—Boltsburn. Stopes in north flats from Watts level worth 24, 30, 36, and 10 cwts. per fathom. Stopes in south flats worth 40, 24, 30, 30, 16, 18, and 18 cwts. per fathom. Vein stopes worth 24 and 12 cwts. per fathom. In proving north flat below the level the ground looks well, and is worth 24 cwts. per fathom. The pumps are now fixed, and sump top on.—Greenlaws. Watsons drift. We are still driving in the lead part of vein, which continues very hard, with no ore. Races drift, vein 4 feet wide, worth 16 cwts. per fathom. Stopes worth 16 and 20 cwts. per fathom. Lowes drift, vein strong and sparry, divided a little, and worth 10 cwts. per fathom. Stopes worth 10 and 14 cwts. per fathom. Slatey Hazel drift worth 12 cwts. per fathom. Quarry level, vein divided, north part very poor; south part worth 8 cwts. per fathom. Stope worth 8 cwts. per fathom.—Sedling. We have driven 3-6 fathom in 64 level east, and crosscut 4-6 fathom through the vein, which is altogether 13 feet wide, composed of spar, rider, and a little ore. Stopes above 64 level worth 10 and 12 cwts. per fathom. Stopes above 56 level worth 10, 16, 12, and 14 cwts. per fathom.—Killhope. In sinking Middlegrove shaft, we are down 12½ fathoms below Park level. Ore raised for the week 58 tons. Ore dressed for the week 56 tons. Ore and slag smelted for the week 73 tons, producing 40 tons of pig lead.

COLONIAL, INDIAN, AND FOREIGN MINES.

BARBERTON GOLD FIELDS (South).—The secretary reports: I am instructed by my directors to inform you that two bags of ore lately received from the property have been assayed with the following results:—Johnson, Matthey and Co., Hatton-garden, E.C., May 29.—"Certificate of assay: We have assayed the samples of mineral as under, and find the following to be the results:—(A) Red ore, weight 12 lb.; produce of gold 1 ounce 6 dwts. 3 grains; produce of silver 5 dwts. (B) Quartz, weight 13 lb.; produce of gold 5 dwts. 12 grains; produce of silver, trace per ton of 2240 lb. of mineral. Frederick Claudet, 6 and 7, Coleman-street, E.C., May 6, 1896.—"Certificate of assay: "I have examined the two samples of ore, and find the following to be the results:—(A) Red ore, weight 6 lbs., gold 2 ounces 2 dwts. 12 grains. (B) Quartz, weight 8 lbs., gold 4 dwts. 12 grains per ton of 2240 lbs." The mine manager's reports continue to be satisfactory, ore of good quality is being raised, and the development of the mine is proceeding rapidly. In a letter just received, dated April 4, the manager states as follows: — "No. 1 winze south drive. The reef in this stope continues to look and pan well, and yields a good quantity of quarts showing visible gold freely. During the past fortnight I have extracted another 60 tons of quartz from said stope and drive, which is now laying at surface ready to be milled.—Thistle drive. I expect to be able to report good progress here in my next letter." On May 1 a copy of the following cablegram was sent you:—"Have made rich strike in rich and visible free gold." The directors are now waiting further particulars with regard to the same, which will be forwarded to you in due course. In view of the very satisfactory reports which have lately been received, it is the intention of the Chairman of the company to proceed to Barberton, with the object of furthering the development and arranging for the necessary plant for dealing with the ore already raised and in sight.

ECLIPSE.—Extracts from the manager's monthly report:—Development work having proved the course and dip of the lode from the Prospect or No. 2 shaft and the crosscuts, a site has been selected for sinking the No. 2 main shaft. Prospect work on the north-west portion of the property has disclosed an ironstone formation, from which, at the bottom of the small shaft sunk thereon 14 feet, samples are reported to give fair prospects of gold. At the middle of March the report was that the main shaft was down a depth of 114 feet, and it was expected that the water level would be soon reached; that the No. 2 main shaft was down 22 feet, and that the ironstone lode stuff continued about as previously reported, prospects showing traces of gold.

EASTER GIFT PROPRIETARY.—Mr. Biesenberger has made the following report: The Easter Gift north, lease No. 1127 E. This claim, which was acquired on my strong recommendation, contains the dip ground of the lodes crossing and outcropping in your leases 188 east and 550 east. On the western portion of this lease, and near the boundary of 182 east, is a large ironstone blow; south and east of this formation is a large area of what is locally termed tucker ground, *i.e.*, ground which will always pay dry blowers. In my opinion, the gold from this ground has been denuded from the blow, which resembles the Great Boulder stone formation, and will I believe, on development prove to be one of the most important finds yet made in the district. I recommend the sinking of a main shaft, and two other shafts upon this claim, which will strike the various lodes in depth, and open up an enormous area of stoping ground.—Water. In the water shaft, which has been sunk to a depth of 120 feet on your lease 182 east there is a depth of water of about 25 feet. By the excavation of chambers at the bottom of this shaft you will be enabled to obtain storage of sufficient water for milling purposes on the whole of your property. In this respect you are in a better position than many of the mines in Western Australia.—The new discovery. In my last report I mentioned that in sinking on lease 182 east at a depth of 80 feet a huge lode formation dipping north was cut, and at the time I was looking out for quartz I attached little importance to this, supposing it to consist chiefly of mullock, carrying little or no gold. Later, when at Lake View, I was struck by the resemblance which this lode material bore to the milling stuff from both the Lake View and the Great Boulder, and assays taken from it across the whole width, which I reckon to be about 16 feet, averaged 2 ounces of gold to the ton. This discovery adds enormously to the value of your claims, and it is certain the mine would never have been sold had it been made before.—Prospects. The bulk of the ore in sight in No. 1 shaft apart from the before mentioned lode averages about 3 and 4 ounces of gold to the ton, and you will have no difficulty in maintaining an average yield when you commence milling of something over 2 ounces of gold to the ton. With the unusual facilities for economical working possessed by this property I can certainly work 1½ ounce stuff at a profit. I pegged out the White Feather main reef, The Lady Loch mine was purchased on my report, and I have at different times inspected the majority of the principal mines of Western Australia, and I can confidently state that you have a property which will, when fully developed, prove to be a good mine.

GOLD FIELDS OF TIERRA DEL FUEGO.—Extract from progress report received from Mr. Hyacinthe Rouquette, the company's manager in Mozambique, under date March 13:—"For two months I have been expecting the Government surveyor to deliver me the official plan of the alluvials, but he is still away in the Chimesi Valley, surveying the ground of the 'Premier Concessions.' Not to disappoint you any longer, I have myself made a sketch plan, which I enclose herewith, duly countersigned by the acting director of mines. I am no draughtsman, and have not with me the proper things for it, but the sketch is accurate. I pegged off and beaconed a block in the Chua Valley, and am anxiously waiting a visit from the surveyor, to send you the plans, as also that of another reef on the east of Pardy's. As soon as the rainy season ends, early in April, I expect to be able to secure other rich properties, for the company, in addition to those already located."

RANDT.—Extract of report received from the mines manager, dated the 8th ult.:—Incline shaft. I am glad to inform you that our sinking operations are proceeding satisfactorily in this shaft. Our footage for the week is 15 feet, making a full depth of 180 feet. I have sampled the reef in various sections, and have found these sections to pan out very well. The reef has a tendency at present of taking a more vertical direction.—March 31. Mr. E. F. Way has reported as follows:—I visited your property on Wednesday, March 25, in company with Messrs. Cooke and Wienand, two of your directors. I examined carefully the workings] so far as they extend, and I am of opinion that the work carried out upon the policy laid down is proving of great value.—Workings examined.—1. Incline shaft. The slip faults are disappearing at depth, and, as anticipated, the reef is assuming the average dip at bottom of the shaft. A sample taken by me at the face on March 25 assayed 1 ounce 3 dwts. 8 grains fine gold per ton of 2000 lbs. over a thickness of 3 feet.—2. Vertical shaft. This shaft has intersected both the reefs in your property as anticipated, and I find the lower, or No. 2 reef, a fine body of ore. A sample taken by me at the bottom of the shaft assayed 1 ounce 2 dwts. 4 grains fine gold per ton of 2000 lbs. over a thickness of 3 feet 2 inches.—3. Cutting or trench between the two shafts afore-mentioned. No. 2 reef is well exposed in this cutting, and a sample taken from the top 3 feet assayed 1¼ dwts. 14 grains of fine gold per ton of 2000 lbs. These were the only three samples taken by me, as I did not think it necessary to further sample until you commenced your assay plan. This I advise you to put in hand as soon as possible. The reef is now exposed from the boundary of the Violet Company, south to the vertical shaft, which I sampled as above, a distance of approximately 950 feet along the strike of the reef, and I presume another vertical shaft has been started at the place pointed out by me, which will prove it for a further distance along the strike.—Tests for freeness of gold in the samples taken. No. 1 sample fire assay fine gold 1 ounce 3 dwts. 8 grains; milling assay 13 dwts, 10 grains. No. 2 sample fire assay fine gold 1 ounce 2 dwts. 4 grains; milling assay 10 dwts. 2 grains. No. 3 sample fire assay fine gold 14 dwts. 14 grains; milling assay 7 dwts. The tailings treated on a laboratory scale only showed the usual results by cyanide process.

PESTARENA.—The following report, dated May 4, has come to hand: At the 33 fathom level east on No. 2 lode a good lode of ore has been cut into on the footwall, averaging 70 centimetres in width, consisting of decomposed quartz and pyrites, and yielding 5 tons per fathom at 1 ounce. At the 46 east on Pozzone lode the lode remains wide, and carries a most promising-looking branch of graphitic schist on the hanging wall. The 46 east on Caunter yields 1 ton per fathom at 1 ounce. The lode in the 46 east on No. 1 lode has somewhat improved, the lode being 1 metre wide, with 50 centimetres of pyrites on hanging wall, yielding 5 tons per fathom at 3 ounces per ton. The 55 on No. 1 is suspended, and the men put to crosscut towards Pozzone. A crosscut is now started at the 33 to intersect No. 1 lode. There are 8 stopes at work, yielding an average of 4½ tons per fathom at 1 ounce 18 dwts. per ton—viz., on Caunter lode at the 46 east, 6 tons at 1 ounce; on the No. 1 lode at the 55 east, 5 tons at 2 ounces; at the 70 east, 6 tons at 3 ounces 10 dwts., and another 7 tons at 2 ounces; at the 90 west, 2 tons at 1 ounce 10 dwts.; 90 east, 6 tons at 1 ounce 15 dwts.; 100 west, 2 tons at 1 ounce. On the A and B lodes at the 70 west, 2 tons at 1 ounce 5 dwts.—Stabioli. Nothing new has occurred.—Kint Concession. The Guja adit has been extended by opening on the Oro Secco lode. The Guja end west on this lode shows it to be 1·50 metres wide, carrying 80 centimetres of low grade ore, the remainder being broken up by graphitic heads. The end east on Depaulis lode carries a small branch of quartz 10 centimetres wide in the centre, and is very hard. In the Quarazza winze the lode averages 60 centimetres wide, carrying 10 to 15 centimetres of ore, composed of quartz intermixed with fine grained pyrites. The Pozzone Mine is now forked to a depth of 32·10 metres. The machinery is running satisfactorily.—W. Henwood Trelease, T. H Mesa.

The first batch of letters of allotment of the NEW MEXICAN ROSARIO COMPANY (LIMITED) have been posted to-night.

ALMADA & TIRITO.—Report for the fortnight ending April 11, 1896: Drivages—The appearance of the lode in Ibarra's Tunnel South has considerably improved during the fortnight. The 150 feet level driving north of Taylor's Shaft continues to open out, and I estimate the lode to be worth at least 3 tons to the fathom, and worth 33 ounces of silver per ton. There is a band of clay in the centre of the drift, which is a probable indication that the two lodes are about to separate. The south end in the 150 feet level is 5 feet wide, and the walls are well defined. The lode is composed of a light red porphyry, accompanied by a small branch of green ore, but it is not at present sufficiently rich to pay for cleaning. In the 150 foot level north of Wilde's Shaft the lode has a good appearance, and I consider that the indications are highly favourable, and several stones of good ore have been extracted. The south end has also improved during the fortnight, the walls continue smooth and well defined. Shafts—The lode in Taylor's Shaft below the 150 feet level has changed, it has now become more solid and substantial, and it is also interspersed with stains of green ore. The lode in Wilde's Shaft is 4 feet wide, and the indications are so far favourable, that I am expecting that as we continue in depth, a paying lode may be opened up.—(Signed) James Pellow.

RAYLEY'S REWARD CLAIM.—The following is an extract from a letter received from this company's head office, dated March 31, 1896: My directors are now in communication with Mr. Lyon and the manager as to the erection of a cyanide plant to work the tailings, which are estimated at 10,000 tons at 1 ounce; this should give a sum of money sufficient at the least to completely develope the mine. I hope to tell you more about this later on.

BRITISH BROKEN HILL PROPRIETARY. — Mining manager's report for week ending 25th March 1896. Main workings: The usual quantity of ore was broken from the stopes in the east vein in southern portion of the mine, and from the far north section, the grade being well maintained, and the faces all round looking well. The stope above the 100 feet level returned 12,234 tons lead ore, averaging 45% lead and 5 ounces silver per ton; below the same level 56 tons, averaging 44% lead and 2 ounces silver per ton. All the ore mined during the week was dumped on the reserve piles on the surface, which are now attaining considerable sizes. From Howell's shaft—200 feet level—we mined 105 tons carbonate ore, averaging 45% lead and 3 ounces silver per ton. Surface: The erection of the jig plant is proceeding very rapidly. The new circular tank on top of the mill will be finished in a few days. The engine to drive the jigs is now fixed and in running order, and good headway is being made on the erection of large engine. The retaining walls of pump pits are finished, and the pump foundations are well in hand. Have started the erection of electric light plant next to mill engines, also the tramlines to convey the ore from the shafts to the mill to ore shipments during the week. Week's assays—carbonate ore—lead, 29.5 to 57.5%; silver, 1.1 to 8.7 ounces per ton.

CHIAPAS.—Mining report for fortnight ending March 31, 1896:—Santa Fe Hill drift, No. 3: driven 2′ 6″; total, 193′ 6″. No change.—San Jose drift: Driven 19′; total, 72′. Passed through the side of the hill. This gives us an outlet for the freemilling ore should a trial run in the Stamp Mill prove satisfactory.—Providencia crosscut E., No. 1: Driven 5′ 6″: total, 322′ 6″. In Wollastonite, we intend to drive this drift to the outer contact.—San Juan winze: Sunk 7′; total, 17′. In Goodore: assay—gold, 15 dwts.; silver, 9 ounces 7 dwts.; copper, 5.86%.—Francisco adit drift N.W.: Driven 12′; total, 30′. In fair milling ore: assay—gold, 1 dwt. 12 grs.; silver, 1 ounce 18 dwts. 12 grs.; copper, 1.63%.—Sylva crosscut, No. 2: Driven 1′ 6″; total, 105′ 6″. In Wollastonite.—Francisco Rise: Risen 7′; total, 7′. In good ore. Assay—gold, 8 dwt. 12 grs.; silver, 9 ounces 5 dwts. 12 grs.; copper, 5.37%.—Taylor deep adit: Driven 10′; total, 75. Passed through river deposit into solid country rock.—Old Providencia: Extracted 321 tons of good grade ore. Assay—gold, 16 dwts. 12 grs.; silver, 11 ozs. 2 dwts. 12 grs.; copper, 6.14%.—Santa Fe stopes: Sent 87 tons to mill. Stopped work in Santa Fe stope W., having worked through to Taylor No. 3 stope.—San Juan stopes and drifts: Extracted 422 tons of average fair ore. Assays—gold, 3 dwts. 12 grs.; silver, 4 oz. 11 dwts. 12 grs.; copper, 4.22%.—Francisco adit and drifts: Extracted 205 tons.—Santa Fe Hill: Sent 105 tons to mill. Very good ore.

MOUNT MAGNET.—Extract from *Murcheson Times*, March 18, 1896: A total area of 25 acres is held by this company, one lease of 6 acres, and one of 19 acres. On the 6 acres lease four shafts have been sunk on the main lode to depths of from 60 feet to 125 feet, the lode varying in width from 1 foot to 3 feet 6 inches. Several trial crushings have been made, the yields varying from 35 dwts. to 43 dwts. per ton. The last crushing of 3 tons treated, which was put through early in December, yielded 52 ozs. The drive on this lode has been extended, proving it to be highly payable in length. In close proximity there is an auriferous dyke, or mullocky leader, which, at a depth of 66 feet, is 15 feet wide, 5 feet 6 inches of the leader being calculated to yield over 1 oz. per ton. A trial crushing of 37 tons put through by the prospectors at the New Chum Otis mill gave an average of 28 dwts. per ton. Arrangements are being made for suitable machinery to work the property. A winding and pumping plant was shipped from England about a fortnight ago, and negotiations are at present being made for the purchase of the Lady Kintore battery. Ten head of stampers it is proposed to reserve for the use of the mine, and the remaining ten head will probably be placed at the disposal of the public. The manager, Captain Piper, is at present pushing on work in the main shaft, with a view of obtaining a sufficient supply of water. The main shaft is being enlarged to 10 feet by 4 feet within the timber, thus allowing for three compartments—two for hoisting and one for pumping. It is anticipated that the whole of the machinery will be on the ground within two months from date. On the 19-acre lease there are several parallel reefs, two of which are now being opened up. On one of these, known as the Office reef, a shaft has been sunk to a depth of 50 feet, and a crosscut put in, proving the lode to be 6 feet wide of payable stone. The drives are being extended north and south, and it is expected that the spot will shortly be cut where gold was first discovered on the reef. No. 2 reef, which is near the S.E. boundary, was opened up to a considerable extent by the early prospectors and others. The lode varies here in width from 18 inches to 4 feet. The quartz here is similar to that in Cue district, and appears to be making wider. Fairly coarse gold is well distributed throughout. In addition to large bodies of gold-bearing stone in the property, there is a splendid quarry of diorite stone, suitable for building purposes. The stone is easily worked, and is already being turned to advantage—the erection of a magazine, smithy, carpenter's shop, and engineer's shop now being in progress.

MOUNT MAGNET.—The following fortnightly report has been received from the General Manager, dated March 16. Mullock pass. The drive south has been extended 20 feet, passing through first class quartz, I estimate it to assay all 3 ounces per ton. The lode is easily worked, two men driving 10 feet weekly. South Boundary shaft. The south drive is now in 20 feet. The lode is very patchy, the quartz makes in lenticular bodies mixed with intrusive rock. The same remarks will apply to the north drive which is extended 12 feet, the quartz carrying a moderate quantity of gold; I think it will give about 15 dwts. per ton. Last week I sent a bulk sample to Cue for assay, expecting to embody the result in this report, but recent heavy rains delayed the mails four days, and stopped traffic for the time generally. However, I hope to send you the result by next mail. We have erected ladder-way in the No. 1 shaft north. Office shaft. The drive north is extended 20 feet. The reef continues to maintain its strength. We are carrying the face 4″ 6′ wide. It is yielding a large quantity of quartz intermixed with gossamy and earthy material. I have sent a sample of this also for assay. Main shaft. We have two men at work here preparing for the timber when it arrives from the seaboard.

NEW CHUM GOLD.—The following report, to March 28, has been received from Mr. L. A. Samuels: New Chum (Bendigo). Shaft sinking in this mine has been resumed, and I purpose sinking a further depth of 50 or 60 feet, as at the 552 feet crosscut (or No. 6 level); we are only just on top of the new formation. Have commenced to drive north at No. 6 level on the reef, which opens up well and shows payable quantities of gold; but the water is so heavy that, until the shaft is about 20 feet deeper, very little work can be done in this level, a temporary dam having had to be put in in order to relieve the pumps occasionally when required. Crushings will be commenced as soon as possible, but this must not interfere with the sinking of the shaft, as the latter work is absolutely necessary, and now will not take long to finish: the reef then can be opened up from two levels, and regular fortnightly returns will be obtained. I am pleased to state the cutting of this reef insures the future success of the mine, as I entertain no doubt as to its high value. The foundations of the pumping engine have been shaken somewhat, owing to the strain in keeping the heavy water down, and will have to be secured at once. This may possibly cause a delay of a few days. I would suggest to the respective boards of the New Chum Gold Mines, and the Southern New Chum Gold Mines, that the higher formations should be worked jointly, power being supplied by the New Chum. Mr. Samuels further states that he has no doubt but that, from about June 1, he will be able to maintain regular crushings, and further, that the No. 7 level (yet to be cut) will probably disclose the reef to be of a very much greater width than now exposed at the No. 5 level (552 feet).

NEW SPES BONA.—The Johannesburg Consolidated Investment Co. Ltd announce receipt of a report from the above company, containing the following: Manager reports an advance of 270 feet in the development for March, opening up 3,537 tons of ore, and bringing up the total ore developed to 59,342 tons on the main reef leader. Main reef has been picked up on the 4th level, and will be opened up on the 5th level. Main reef leader on the 4th level is keeping up its average richness.

PULIDO MINING—The first small shipment of ore from the company's mine has arrived, and assays as follows: From the dumps—Copper, 10.63%, 6.76%, 14.95%. Gold, 15 dwts. 16 grains, 14 dwts. 9 grains, 1 ounce 2 dwts. 5 grains. Silver, 7 dwts. 20 grains, 14 dwts. 9 grains, 2 ounces 9 dwts. 16 grains. From the mine—Copper, 11.86%, 23.44%, 41.08%. Gold, 11 dwts. 18 grains, 17 dwts., 15 dwts. 16 grains. Silver, 7 dwt. 20 grains, 1 ounce 10 dwts. 1 grain, 1 ounce 6 dwts. 3 grains. Arrangements have been made for the formation of a subsidiary company to work a group of concessions owned by this company at some distance from those at present being worked, and active developments are being proceeded with, the ore so far showing very satisfactory results.

SUNBEAM AND VIGILANT.—Kalgoorlie, W.A. Mine report for fortnight ending March 14, 1895.—Sunbeam: Sinking is here being continued as fast as possible; we are off the reef and shall crosscut towards it at the 60 feet level, and so prove the country between the shaft and the reef. At present we have a small formation in the shaft, which is running parallel to the outcrop on the west. Sunbeam East: The shaft is now sunk 65 feet, and we have commenced crosscutting towards the reef which outcrops so boldly on the surface. In the crosscut we shall probably cut the lode formation at no great distance from the shaft, which left it at the 35 feet level with a westerly underlay.—Sunbeam North: The shaft is being sunk in the country rock west of the reef, which we shall probably cut at about 50 feet on the underlay, failing this we shall only have a few feet to crosscut for it. We have timbered the shaft some 12 feet, but think the country is sufficiently strong to hold of itself from now.—Sunbeam Extended: The shaft is now down 22 feet 6 inches, and is being sunk between two reefs, which I purpose crosscutting for at 65 feet level, which will also expose any blind reefs or formations which may be running parallel with the main reef.—Vigilant: In this shaft which is being sunk off the reef, we have two ironstone and quartz leaders running parallel with the reef which makes the sinking somewhat tighter than it otherwise would be; at the 60 feet I purpose to crosscut towards the reef, and then driving north to intersect at the junction of the two strong lodes, where I am expecting that we shall cut pretty fair gold, the leaders we are now passing through prospect a few colours, but the junction of these two big lodes is where we ought to get something all right.—Vigilant North: We are now sinking here on more of a lode formation than a reef, which resembles the formation stone raised from the Lake View South, more strongly than any other formation I have seen in the district, the lode at present appears to underlay east, and if it continues I shall crosscut it at 30 feet and drive both ways on it to cut the junction of two different cross reefs, which should intersect it about 15 feet either side of the shaft.—Vigilant Extended: We are here sinking as fast as possible, having pretty fair ground to break also for holding. We are sinking for water without delay, and hope to cut it under 100 feet, and a supply at 200 feet.—H. Ley Hancock, Acting Manager.

BREMNAES GOLD.—The following report has been received from the mine, dated Haugesund, May 4; Risvig Mine. The rise from 400 north has been communicated with the workings from the level above, and the men have commenced to stope north from same. The quartz is over 2 feet in width, and is well mineralised. Some good stuff is being broken in back of 300 north. The lode is narrow, in places only a few inches, but this is compensated for in increased gold contents. The 200 south level is improving, the lode now showing a width of nearly 2 feet. The men have commenced to crosscut east from 100 feet south level to a parallel lode about 32 feet distant. This same lode at surface is of a very promising appearance in places, showing galena with gold. The 80 feet north level is without material change. A few strings of quartz carrying a quantity of mineral are met with, which seem to indicate an early improvement. We have milled 150 tons of quartz from above working with result—37 ounces gold.—Fladenæs Mine. The north level is being driven in quartz the whole width. A run of quartz in footwall is of good quality, showing galena and having value for gold 5½ dwts. per ton. The workings from open cutting show quartz of excellent quality; 100 tons milled from these workings have given 36 ounces gold.—Gapleskog Mine. We have communicated the bottom north level with the winze from the level above. This opens up a large section of stoping ground, of which we shall avail ourselves as soon as we can get miners. We are short handed, as several miners have left for military service. The rise and stope in back of upper level are working in quartz, varying in width from a few inches to nearly 2 feet, same well mineralised, and of value for gold 5 dwts. per ton. From this section we have milled during the month 40 tons of quartz for 12 ounces of gold. From all sections the month's milling shows 100 tons of quartz milled for a yield of 85 ounces of gold; beyond this about 7 tons of concentrates have been saved, having gold contents 2½ ounces per ton.

GIBRALTAR CONSOLIDATED.—Report No. 2 up to Wednesday 25th ult.:—Radcliffe shaft, 355 feet level north drive. This drive is in 12 feet from shaft, gone 3 feet, reef 2 feet thick of good quality stone.—355 level south drive. This drive is in 12 feet from shaft, gone 7 feet, reef 2 feet thick of good quality stone.—230 feet level south drive. This drive is now 183 feet from shaft, gone 3 feet, reef 1 foot thick in the face. In addition to this the reef for 25 feet back in the drive (which looks well) has been taken down. About 30 feet back from the face a good leader, 4 inches thick, went off in the eastern or hanging wall, which I followed for a short distance, and it looks well so far as I have gone.—230 feet level north drive. This drive is now in 153 feet; gone 6 feet since last report; no change.—160 feet level north drive. The winze in this drive is now down 29 feet; gone 9 feet; reef over 1 foot in size of good quality stone.—160 feet level south drive. Crosscut to the west off this drive is now in 85 feet; gone 8½ feet; no change. I have started a winze 100 feet south from the shaft on this level, and have shot in the wall 10 feet by 5 feet to get into the proper channel to start a winze on.—40 feet level north drive. This drive is now 46½ feet from shaft; reef 1 foot thick of medium quality stone.—O'Brien's shaft. This shaft is now down 139 feet and timbered; no change since last report.—Perkin's shaft. This shaft is now down 61 feet from point of commencement, and has gone 8½ feet since last report. A large bunch of stones in the south end of the shaft is crossed by leaders carrying a little gold.—Crosscut to the east of Downhill drive. This is now in 54½ feet from starting point; gone 3½ feet since last measurement. No change since last report.—Crosscut to the east of uphill drive. This is now in 71½ feet from starting point; gone 9 feet since last report. No change.—Shepard's shaft. This shaft is now down 164 feet from surface; gone 10 feet since last report. It is now making a lot more water, but, so far, has not interfered with the working, otherwise no change to report.—Race. Good progress has been made with this work. There are 3683 yards in length of this work nearly completed; all the pick and shovel work is done, but there is considerable amount of blasting in different parts to do yet. I have started the men to clean out the lower race and repair it; this, of course, will not be an expensive job, as it is all shovel work.—General remarks. Good progress has been made in the erection of the winding plant at Radcliffe shaft, and when winding drums arrive on the mine, no doubt I will soon have it in working order.

RHODESIA (LIMITED).—Extract from Mr. Hirschler's letter dated April 3; Native rising. The first news of the rising reached town on Tuesday, the 24th, at midday. Mr. Cumming, who has a store about 3 miles north of the Nellie reef (a property I am largely interested in), rode the 65 miles to town in 14 hours, and reported that Mr. Thomas Maddocks, my manager at the Nellie reef, was murdered and two of the miners (Hocking and Hosking, who were amongst the lot you sent to me) wounded; and that the two men managed to escape through the hills and reach his store. I thought it my duty to go immediately to their rescue and was joined by Mr. Phil Wrey, of the Mashonaland agency, Mr. Cumming and his partner, Stuart Meikle. In the meantime, preparations were made to send police and volunteers to the same district, but, on enquiry, we found that the Imperial officer in charge of police and volunteers refused to deal out ammunition, and I had myself trouble to get 12 revolver rounds. Our party of four started at six p.m. on Tuesday, travelling all night. At a distance of 30 miles from town we found one of Cumming's wagons in the road and all the donkeys, 16 in number, assegayed and shot, lying in a heap unharnessed. This showed us that our apprehensions of a general rising, very much doubted by the authorities, were correct. As we were then right underneath a kopje with native kraal, we withdrew about two miles to water, outspanned our mules, and Meikle rode back to see whether any troops were coming. Fortunately he met, within three miles, Mr. Maurice Gifford's party of six men and 12 police, who then proceeded together, having in all 23 guns between us, but very little ammunition. We travelled again all day, lagering up about 1½ miles this side of the Insiza. All night we heard noises amongst the kraals on the opposite side of the valley. Early the following morning (Thursday) we made a dash through the river and across the hill range, meeting no natives, and arrived at Cumming's store at about 10 a.m. There we found about 25 men, half of whom were armed, a Mrs. White, a farmer's wife, and her baby. My two wounded miners were there, Hocking, shockingly bashed and battered, Hosking with only one very nasty scalp wound. From them I got the details of the attack, which showed that the niggers were that night on a murdering expedition. By noon news reached us that the whole of the Cunningham family, consisting of old Mr. C., Mrs. C., her young daughter, two lads, and three children, in all eight people, were murdered, and also that another farmer in the district, Mr. Langford and his wife, were killed and were lying round their homesteads. We determined to patrol next morning and bring any surviving farmer or prospector, several of whom were still missing, into the laager, and also to bury the dead. Our plan was, however, frustrated by a very determined attack made upon our improvised laager early next morning, when it was perfectly dark. The position we held was execrable, being just underneath a very high granite kopje, and virtually commanded from all sides. The attack, in which I reckon about 150 natives must have taken part, came from the centre and two sides of the said granite kopje. The niggers made a sudden rush, and when our pickets fired they were right up to the stoop of a dilapidated mud house, without roof or windows. There was hot firing on both sides in the utter darkness for about five or six minutes, and we had killed seven natives, who were lying almost in front of the stoop. Others must have fallen in the rocks, but we had no chance of looking for them, as desultory shooting continued until a good hour after daylight. Our losses were one man (Sergeant O'Leary, of the police), shot through the lung, dying within an hour. Mr. Wrey's nigger driver assegayed to death and shot, and five wounded, three seriously. Further, two of my mules and five horses shot. I must say that all men showed great pluck and coolness, especially Gifford, who exposed himself nearly all the time, and Inspector Southey of the police, who dragged poor O'Leary to the hut under fire, and Mrs. White who tended the wounded while firing went on. I reckon we had about 20 guns against us, all Winchesters, which, I am afraid, belonged to the native police. As soon as we could give a thought to anything but our immediate defence, we determined on getting out of this ideal rat hole as quickly as possible and *coute que coute*. We saw gangs of natives coming across the hills and had to act rapidly. Two wagons were loaded with the necessary provisions and on top of the bags we placed the wounded, while Hocking and Mrs. White sat in my trap. Cumming left about 400 head of cattle behind. Arranging, our small force in advance and rear guards, and flanking parties, we struck right across the crest of the hills for the Belingwe Road, and from there back towards the Insiza. While we tracked we were looked on by about 300 to 400 natives, sitting like baboons on the crest of the granite kopje, and I cannot imagine why they did not attack us. Once on the road we marched very rapidly, so as to get into the Highveldt. There we were met by two dispatch riders from the volunteers, saying that they were not coming, as they were ordered to the Shanani on the Gwelo Road, where there was murder and rebellion. We regretted this the more as we had intended to hand the wounded over to a strong patrol, and to return to the relief of the Belingwe men (D. T. Laing, Sir Fred. Frankland, and his men). Under the circumstances we had to go back to Bulawayo, where we arrived Sunday morning after two very anxious nights. We found Buluwayo in laager, and in a state of indescribable excitement. News of murder, wholesale and cruel, came in from all sides, and rescue parties had to retire without being able to bring help. There is no doubt that the whole country is aflame, and as we have a very large number of women and children to protect, the available men cannot be spared, especially as small parties are of no good at all. Napier, with one lot of 120 volunteers, had gone only 45 miles, and returned to town under orders of our Council of War. Gwelo is besieged, and the natives are gradually investing Buluwayo. Our laagar is on the Market-square, and as far as strength is concerned absolutely impregnable, but you may imagine what fearful nights we are having amongst this seething mass of mixed humanity, and I certainly felt less depressed and nervous when under fire. We certainly must be assisted from outside, and I only hope that Mr. Rhodes will ask help from the Imperial Government without delay. And mind, this help must come quick. The natives are well armed, and have learned a lot. I am helping in a general way, and we have already organised a few strong flying columns, that will be used to make occasional sorties. I understand that 500 men (old B.B.P.) and Kimberley horsemen are coming up, and will be commanded by Imperial officers. The company can rely upon my watching their interests, and seeing that everything remains protected.—Yours faithfully, I. H. Hirschler.

WEST AUSTRALIAN GOLD CONCESSIONS.—The company's manager at Perth telegraphs under date May 1, re "Meter" (late Talisman Extended). A reef has been found 1 foot wide, the lode is widening out, the lode contains 1 ounce of gold per ton. The company's manager at Coolgardie, writes under date March 3:—There has been a new lode struck on the "Mentherungie" (old name of the Golden Dyke), which looks very promising, showing gold very plainly. I think there is every prospect of it turning out a first class property. The following refers to the discovery made by the company's prospecting party, dated Coolgardie, March 25.—Black Flag. I have taken up 24 acres, the location is one mile west of the big mine. The prospectors are down 15 feet. The reef is 2 feet wide, will average 4½ ounces. The name the 24 acres will be known by will be the Ajax. Under same date reference is made as follows to the new find on the Talisman Gold Mines. The reef is still opening out well. The reef is now about 4 feet wide, average value 3½ to 4 ounces, and it will take the men in the extended (concessions property) a few more days to strike the reef. I will forward a report by next mail.

LUCKY GUSS.—Extract from manager's letter dated Cripple Creek, April 24: The crosscut (to the Orpha May lode) is in 35 feet. Hope to cut the vein between 40 and 50 feet from place of beginning. Shaft timbered to surface; will be completed this afternoon. Feel sure that ere long we shall be shipping lots of ore.

AUSTRALIAN BROKEN HILL CONSOLS. — The mining manager reports by mail for the fortnight ended March 26: Block 96. 280 level east No. 3 rise driven 8 feet, total 101 feet; stopes driven 5 feet. Lode small, and passed through the diorite into schist, the last few feet showing carbonate of copper in floors of the country rock. At this point the lode has been explored on both sides of the rise for a few feet. Incline No. 6 level east driven 8 feet, total 123 feet. The lode here has widened, carrying three veins of carbonate of iron, showing a little galena. No. 4 level east No. 1 rise, east stopes, driven 6 feet; west stopes 7 feet. No change. No. 2 level east stopes driven 13 feet. Explored the stopes between this level and No. 2½ east, but without any results.—Note. The quantity of rock mined during this fortnight was 1788 cubic feet.

BAYLEY'S REWARD CLAIM.—Report of work done for fortnight ending March 14: Everard shaft. The south drive at the 100 feet level of this shaft has been extended 10 feet, total 75 feet. The reef is showing for a width of 16 inches, the walls being well defined.—Air shaft. South drive from the bottom of shaft is now in 28 feet. No quartz showing in face, which consists of clean country.—T. V. Browne

BAYLEY'S REWARD No. 1 SOUTH.—Mining report dated Coolgardie, March 16: Work done for fortnight ending 14th instant. 120 feet level. Have started to sink a winze at a point 38 feet north of rise from back of 170 feet level, the same being down 7 feet. The reef is 2½ feet wide, but as yet have seen no gold in sinking.—90 feet level. Winze 66 feet south of shaft has been sunk 4 feet, total depth 20 feet. Lode 2½ feet thick. The south drive has been extended 20 feet south of Whip shaft, total length 38 feet.—170 and intermediate levels. Stoping has been carried on at the back of these levels and good stone broken.—Prospecting shaft. This shaft is now down 62 feet from surface and ground still favourable for sinking.—Battery. During the month 130 tons of stone were crushed.—Yield, 455 ounces of gold.—T. V. Browne.

COLUMBIA (Charters Towers).—We are officially informed that the company has acquired an additional 25 acres from the Crown, thus increasing the area of the company's property to 50 acres, and the managers write, under date March 13, that "the boundaries of the two leases are arranged so that both can be represented from the shaft, and the extra ground will be a valuable addition to the company's property."

EAST NIGEL.—Report from Mr. Banon for the fortnight ending April 11:—No. 3 incline has been sunk a further depth of 14 feet, making the total depth now 101 feet. We are now in the hard quartzite immediately overlaying the reef. I should cut the reef in the next few days.—No. 2 incline. The winding engine for this incline is now completed, and the foundations excavated for the boiler. We are laying a double track down the incline and putting in a stairway. The bed for the mill engine is now completed, and the foundations for the boilers excavated. A contract for putting up the boilers has been let. We are now well supplied with native labour.

ETHEL-HOPE GOLD MINES.—The managers, Messrs. Bowes-Scott and Co., of Coolgardie, write me under date March 24, as follows:—We have obtained another month's protection, dating from the 20th inst., which is granted pending the arrival of the pump, and which obviates the necessity of doing any underground work on lease 1806 (Good Hope); at the same time, the full number of men for manning the two leases is engaged on the erection of machinery and surface work. On lease 1618 (Ethel) men, as you are aware, are at work driving in the crosscut from No. 1 shaft and to No. 2 shaft. The foreman at the mine writes under date March 21:—I have pleasure in stating that the reef we cut in No. 1 shaft (Ethel) has improved since we have been driving on it, and has opened out 4 feet wide, but at present the lode is divided by an intrusion of rock or country, but I think it will cut out again after we have driven a few feet and the reef get more defined. I took a sample and tried it this afternoon, and it produced some nice fine gold. We are only driving one way—north-west. The lode is underlying a little south, not very much.

FOXDALE (Isle of Man).—April 30: Beckwith's shaft. The sinking below the 275 fathoms level is being carried on as usual by a full force of men, and, on the whole, fairly satisfactory speed continues to be made.—275 fathom level west. The lode in this forehead is yielding about 2 tons of lead ore per fathom. With the object of proving this level by crosscutting at different points we have been obliged to temporarily suspend the end driving on north lode. In the end driving east there is a strong masterly lode, which is composed chiefly of quartz and spathose iron with blotches of lead ore, worth from 15 to 20 cwts. per fathom.—260 fathom level east. During the past month the lode in this driving has been rather changeable at present, however it is producing fully 2 tons of lead ore per fathom. Not having discovered anything of value in the crosscuts from the north lode, we have resumed the driving of the level on the course of the lode. The crosscut driving north from the east level has not yet proved the full width of the lode, and until something more definite is met with it is advisable to extend it. There is no change of importance in the levels driving at the 245, 230, 215, and 200, all of which are being carried on in their regular course.—Bawden's engine shaft. The necessary preparations for sinking this shaft below the 260 fathom level will be completed in a few days.—Pott's shaft. Fair progress is made with the sinking, which is 8¼ fathoms below the 185 fathom level.—115 fathom level west. The lode in this driving continues to produce fully 2 tons of rich silver lead ore per fathom.—W. H. Kitto.

CRESCENT GOLD.—Fortnightly report of Mr. T. G. Davey, superintendent, dated March 27. Crescent Mine. Tunnel B towards main lode driven 2 feet, total 419 feet. Drive north of tunnel B extended 16 feet on main lode, which is 5 feet wide, and consists of soft friable quartz which is highly mineralised, but so far non-auriferous. The influx of water in this drive, which has been extremely heavy, has now decreased.—Victory Mine. Drive north of tunnel E on Neill's lode advanced 22 feet, total 175 feet. Lode small and poor. Crosscut east of same drive extended 9 feet, passed through stringers of quartz which are somewhat auriferous, and reached hanging wall of lode formation. Drive south of same tunnel advanced 21 feet, total 139 feet. Lode 4 feet wide, and carrying colours of gold, crosscut east of same drive to hanging wall of lode formation extended 6 feet, passing through small veins of slightly auriferous quartz. Extension of tunnel E towards western lode advanced 21 feet, total 239 feet. Traversed a well-defined lode 4 feet wide, carrying a little gold, which will be developed later on. Winze below drive south of tunnel G sunk 16 feet 6 inches, total 34 feet 6 inches. The lode has become very small, and we have commenced to drive north and south of winze on its course.—Chance Mine. Tunnel towards Howard's eastern lode extended 10 feet, total 28 feet. Lode not yet reached.—Orlando Mine, Tunnel P towards eastern lode advanced 12 feet, total 240 feet. There is every indication of the lode being reached within the next few feet.—New Hill. We hope to start crushing operations during the coming fortnight.

HARRIETVILLE.—Fortnightly report of Mr. T. G. Davey, superintendent, dated March 27: Tiddledee Mine, Bibby's new lode. Line at back of drive north of tunnel advanced 17 feet. The lode has become very small and carries a little gold. Extension of Tunnel E towards Bibby's lode advanced 21 feet on what appears to be a crosscourse, which is somewhat auriferous. In retimbering and securing a pass from Tunnel E to D a small vein of quartz was discovered in the hanging wall at the latter level. The vein is only a few inches thick, but is valued at 5 ounces of gold per ton. We have just commenced an underhand stope on this vein.

HOLCOMB VALLEY.—The following are extracts containing the essential portion of the preliminary report, dated April 13, received from Mr. George Thomson:—It is difficult to say exactly how much gold the gravel carries. In some places we find it very rich, sometimes running over $5 per ton, and near to the same place it may only run about $2, but I have considered, as a fair estimate, an average of $2·50 per ton, reckoning only 3 feet from bed rock. The gold-bearing gravel lies on the top of a kind of cement, and, as a rule, the gold is within 6 feet of the top of this cement.—Water supply. By keeping the waste by itself and screening out the coarse material from the auriferous gravel, we judge we should have ample water; however, you will observe that I recommended the extension of the Nelson shaft. From this source we expect the water to be doubled; besides, there are several other places from which water could be acquired if necessary.—Black Sand. Mr. Thame informs me that there is about 3 per cent. of black sand in the gold-bearing gravel, and that some of it is very rich in gold. I have no doubt but that I can handle this for you, and have therefore taken a sample with me and will report to you later on it, but if the amount of gold is in such quantities as is verbally reported to me, there is a large profit from this source alone.—New hoist. Our intention is to take the material up to such height as will leave ample fall for sluicing and storing up waste material and tailings, and to put the work on a general uniform system. I have arranged that there should be open cast cuts run across the gulches at a distance of about 1000 feet apart. In doing this the steam shovel can be worked to advantage, and the ground between these cuts can either be mined or excavated, according to its nature. As the collection of gold will be the principal revenue, it is of the utmost importance that the new hoist should be put up at the earliest moment, and that no time should be lost by the company in providing the necessary means. In the meantime, I beg to advise that you proceed with your present mining operations, so that some small revenue may come during the time the equipment is being put into shape. As soon as the new hoist is completed you may find it advantageous to use the steam shovel where excavating work may be required. The difficulty experienced in using the shovel in the past will be overcome by the use of dump-cars and the new hoist. Referring again to the deepening of Nelson shaft, Mr. Thomson says:—It is evident it will increase the quantity of water; besides, by sinking below the cement and reaching the granite, it is possible a layer of auriferous gravel may be found on top of the granite. (You are aware that with old miners it is considered probable.) If such a thing happens, it will be a great thing for the Holcomb Valley Company. I understand the cost of continuing extending the shaft will be comparatively small. The manager writing on the 11th ulto, says:—The (Nelson) shaft is already down 70 feet, and granite is at 110 to 120, judged by the borings I made on the Victor claim. Mr. Thomson estimates the cost of collecting the gold not to exceed $1 per ton, and under certain circumstances to be as low as 83 cents, thus leaving a profit per ton of from $1·50 to $1·67, according to the method of excavation that has to be adopted. With regard to these estimates, he says:—The figures I have given can certainly be carried through, and I look upon them as data for you to go by. They really embody the essential part of my report.

KINSELLA GOLD MINES.—Mine report for fortnight ending March 19: 43 feet level north drive, section 14. This drive is now 192 feet 4 inches from No. 1 north shaft. Have also driven south from No. 2 north shaft 6 feet, making total distance 51 feet from this shaft. Expect these two drives to meet end of next week; reef about 3½ feet in both drives.—43 feet level north stope, section 15. Four men stoping here, reef averaging 5 feet.—43 feet level south stope, section 21, 2 Men still working here; reef 3 feet at this point; all this going to battery.—No. 2 winze south. We have five men 14 feet above back of 100 feet level south driving north and south. Lode 4 feet wide. Stone going to mill.—100 feet level south drive, section 21. Have driven 8 feet for fortnight, making total distance 354 feet from crosscut. Four men partly engaged working here.—100 feet level north drive, section 15. This drive is in 190 feet. We have crossed and reached footwall of lode. Reef 15 feet wide of poor appearance. We have eight men started to stope from back of 100 feet level north of No. 1 winze. We are taking from 1 foot to 18 inches of stone.

LILLOOET, FRASER RIVER, AND CARIBOO.—Information is to hand from the office of the company in Victoria, British Columbia, that the Royal assent has been given to a special Act that has passed through Parliament, conferring a charter upon the company. This, we are informed, gives the company full and very exceptional mining, water, timber, and many other invaluable privileges, and the right to add the word chartered to its title.

MOUNT ZEEHAN (Tasmania). — Manager reports for week ended March 24: Silver Queen section, No. 8 lode, No. 2 level. Winze has been sunk 8 feet, total 46 feet. Lode in north end is carrying small stringer of fine grade galena. Ore raised, four bags of firsts. Concentrator has been kept running on Zeehan Montana Company's second-class ore.

PICK O' THE FIELD.—Report dated March 20 from Mr. Samuels: The main engine shaft has now been completed to water level—viz., 180 feet. Shaft is completely timbered and divided into three compartments, and is now ready for machinery, tenders for which have been called.

QUEEN'S CROSS REEF.—Copy manager's report for fortnight ending March 17:—The underlie shaft has been sunk by contract a further distance of 16 feet, making a total of 72 feet from the drive. There are 2 feet 6 inches of good quality stone in the sink and several other leaders intermixed with the formation. Sunk the winze a further distance of 13 feet, making a total of 79 feet from the drive. The reef is about 2 feet in thickness, and of good quality, but getting a little steeper in the winze and shaft. In the eastern drive have been shooting the north side to prepare for driving. There are about 6 inches of fair quality stone, with other leaders intermixed. It will be ready for driving in a day or two. The reef in the stopes behind the shaft has broke up a little whiter this time, but has good patches of mineral in it. Have got this stope well ventilated, and other necessary work has been attended to. The quantity of stones raised for the fortnight is 74 tons, making a total of 264 tons in the paddock.

ROYAL SOVEREIGN (25 Mile, Coolgardie, Western Australia).—The manager reports as follows under date April 22:—Main shaft. Eastern crosscut has been driven 15 feet, making total of 113 feet 6 inches. Am putting on two men to drive on the seam of stone we passed through a few days ago. Am also putting on two men to drive south on the strong body of quartz referred to in my last report, which was 3 feet 6 inches wide and carrying nice fine gold. Western crosscut has been driven 9 feet, making total 116 feet; there is no change here.—No. 2 east shaft. Crosscut west has been driven 4 feet 6 inches, making total 9 feet 6 inches; the stone in this drive is looking well. We have had good rains in the district, the dam at the 25 Mile having fully 12 feet of water in it. The company's agent, Mr. R. S. Gorrie, writes under same date that the mine is looking exceedingly well, and although the manager does not express his opinions too fully in his reports, he (the manager) is thoroughly satisfied with the prospects of the property, and is confident that he will ultimately bring it a long way ahead of the Premier and Lone Hand Mines, which are in the same district and doing well.

ROBINSON GOLD.—The general manager's summary of operations of the company for March, together with statement of expenditure and revenue, is as follows:—Mine. Quartz mined, 16,350 tons.—Development. Drives 822 feet, raises 175 feet, crosscuts 39 feet, total 1036 feet.—Main incline shaft (west). Fifth level. Driving east on south reef 50 feet.—Sixth level. Driving east and west on south reef, 53 feet.—Seventh level. Driving west on main reef 34 feet, driving east on south reef 37 feet, raise 9 feet.—Eighth level. Driving west on main reef 32 feet, driving east and west on south reef 47 feet.—Ninth level. Driving east and west on main reef 108 feet, driving west on south reef 48 feet, raise 42 feet.—Tenth level. Driving west on main reef 37 feet, driving east on south reef 25 feet, raise 45 feet.—Main incline shaft (east). Fifth level. Driving east on main reef leader 22 feet, crosscut 22 feet.—Sixth level. Driving east and west on main reef 54 feet, driving west on south reef 4 feet, raise 39 feet.—Seventh level. driving west on main reef leader 26 feet, crosscut 17 feet.—Eighth level. Driving east and west on south reef 84 feet.—Ninth level. Driving west on main reef leader 43 feet, driving east and west on south reef 36 feet.—Tenth level. Driving west on main reef leader 43 feet, driving west on south reef 39 feet, raise 40 feet; total 1036 feet.—Stamps at work 120, net running time 29 days, tons crushed 16,350, tons per stamp per diem 4·7, gold won from above 10,098 ounces 14 dwts.—Chlorination and cyanide works. Gold won from own concentrates (by chlorination) 960 ounces, bullion from tailings (cyanide process) 1698 ounces 12 dwts., bullion from slimes (Rand Central Ore Reduction Company, Limited) 1591 ounces 17 dwts.—from own ore 14,289 ounces 3 dwts., gold from concentrates purchased (by chlorination) 1977 ounces 6 dwts.; total 16,266 ounces 9 dwts.

EXPENDITURE AND REVENUE.
Crushed 16,350 tons.
Working expenditure.

				Cost per ton
Mining account (including mine maintenance)	£8,386 18 1	...	£0 10 3·11	
Milling account (including mill maintenance)	2,619 17 5	...	0 3 2·46	
General maintenance account ...	273 10 8	...	0 0 4·01	
General charges	1,775 7 1	...	0 2 2·06	
	£13,055 13 3	...	£0 15 11·64	
Expenditure on mine development, (including main shafts)	3,194 11 11	...	0 3 10·90	
Ditto on machinery, plant, and buildings	3,857 13 3	...	0 4 8·63	
	£20,108 6 5	...	£1 4 7·17	
Retreatment account:—				
Working expenses at cyanide and chlorination works ...	1,985 11 0			
Cost of concentrates purchased (including receiving)	6,615 8 11			
			£28,709 6 4	
Profit for month			25,911 5 9	
			£54,620 12 4	

REVENUE.

Gold account (mill), 10,098 ounces 14 dwts, ...	£35,976 12 3		
Sundry revenue	300 0 0		
		£36,276 12	
Slimes plant account:—			
6905 tons delivered	£881 4 10		
Company's share of profits to February 29, 1896	257 17 11		
		1,138 2 9	
Retreatment account:—			
Gold account (tailings), 1638 ounces 12 dwts.	£5,145 19 0		
Gold account (own and purchased concentrates), 2937 ounces 6 dwts.	12,116 0 0		
		17,261 19 0	
		£54,676 14 0	
Less amount received below book entry for January gold		56 1 11	
		£54,620 12 1	

VICTORY (Charters Towers). — Mining manager's report for fortnight ending March 21: No. 2 shaft. During the past fortnight the 320 feet level has been driven 13 feet, present length of this drive 309 feet. There is no change here. The country we are going through here is much the same as we had in No. 2 and 3 levels. In the rise above No. 1a the reef is looking better the last three shifts. Last week the reef had nearly cut out altogether, it is now from 3 to 15 inches, some of it very fair looking-stone. No. 7 level has been driven 8 feet for the fortnight, total length of this drive 309 feet. I do not think we are far from a change in this drive, the last 2 or 3 feet the ground has not been so hard and shooting better. There has been hauled from this shaft 17 tons for the fortnight. Estimated quantity at surface, 52 tons.—No. 3 shaft. The underlay has been sunk a further 22 feet, total length from straight 204 feet. We are still winking at the same grade, and are now 68 feet from where footwall turned over. We have got what appears to be the hanging wall of the reef, but have not touched the footwall yet. There is about 3 feet of softish formation below hanging wall carrying several veins of stone from 2 to 6 inches, some carrying fair mineral, and showing gold occasionally. In places these veins come together, and make a bunch of stone from 9 to 15 inches thick, it will average across the face in the bottom about 12 inches. The hanging wall is going away at a much flatter grade than the shaft. We are now about 8 feet below it in the bottom of the sink and no sign of footwall. There has been hauled 8 tons of quartz from this shaft for the fortnight, total at surface 48 tons. The new engine was delivered on the mine on Monday, the 16th inst., and on 23rd inst. we shall be ready to give it a trial, and expect to start working with it on the following day. There has been no stoppage of work in the shaft. We shall continue to work on with the old engine until we have the other ready for work.

VICTORIA AND QUEEN GOLD.—Copy manager's report for fortnight ending March 17: The No. 4 drive has been driven a further distance of 8 feet, making the total from draft mark 48 feet. The reef is about 1 foot thick of fair quality stone. Have sunk the winze at the end of No. 3 crosscut on slide a further distance of 17 feet 6 inches, making total from draft mark 34 feet. The reef is about 6 inches of good quality stone. Have driven No. 3 drive a further distance of 19 feet, making a total from draft mark 126 feet. The reef is about 10 inches of fair quality stone. The underhand stope No. 3 drive averages about 18 inches of good quality stone. During the fortnight the No. 3 drive has holed through to No 2 winze and the back stopes. No. 3 drive has holed through to No. 2 underhand stopes. The reef along the back No. 3 stope averages about 1 foot of heavy mineral stone. Also along the bottom of No. 2 underhand stopes. We have hauled during the fortnight 130 tons, making total at grass 255 tons.

WATER TRUST, MINING, AND PUBLIC CRUSHING COMPANY OF WESTERN AUSTRALIA.—We have received the following information as to this company's crushing works and mines:—Crushing plant at Northam. The last part of the machinery and boilers for the 80 stamp mill was shipped at the beginning of April, and is expected to be delivered at Fremantle very shortly. The general manager of the company's works, Mr. Carl Hesse, reports, under date April 2, that the siding connecting the company's works with the Government railway is completed, and that the iron-work for the 80 stamp mill is being brought up from Fremantle for erection. Timber and machinery are now being received at the mill site by rail.—Lagoon at Northam. The lagoon is reported to be full of the water at the top of the dam. Steam pumping plant for conveying water from the reservoir to the mill site for transportation to the gold fields is under order, and will be delivered shortly. Combination railroad trucks, capable of conveying 6 tons of ore, and a return freight of 4 tons of water, have been designed, and, after approval by the Government have been ordered. Delivery is expected very shortly.—Golden Pig Mine. Engine shaft is down 125 feet. Mr. Hesse has ordered it to be sunk further to a depth of 200 feet with all despatch. A crosscut will be run to the lode, also drives both north and south from the 200 feet level. The drive at 100 feet level is 275 feet long. Average samples from various parts of this drive were assayed in Perth. Bulk samples show from 6 dwts. 12 grains to 1 ounce 9 dwts. 9 grains fine gold per ton.

WESTLEIGH.—The manager (E. H. Bulman) writes under date April 1 as follows: Mining. Out of the five shafts which are sinking here at present four have made progress, the east incline having been standing pending the completion of the hauling engine and box, which I expect to have working by the end of this week. The No. 1 west incline is increasing its quantity of water, and is consequently increasing the difficulty and cost of sinking, but I have no fear of eventually striking the reef, which I expect will be about 110 feet. The following is the fortnight's progress:—West incline 15, total 392. West vertical No. 1 6, total 80. West vertical No. 2 nil, total 35. East incline nil, total 142. East vertical No. 1 4, total 70. East vertical No. 2 6, total 146. Venture pit nil, total 21. Total progress 31. This shows a smaller amount of sinking than usual; but I hope to make up for lost time next month, when I expect to have the machinery in full swing and all the shafts working.

BLACK FLAG PROPRIETARY.—The following is the latest information from Western Australia: The permanent development of the mine is being actively and systematically pushed forward in order that an ample supply of ore may be available as soon as the crushing machinery is erected. In spite of the difficulties of transport the bulk of the machinery for the 50 Stamp Mill is expected at the mines immediately, and energetic steps are being taken to provide for its speedy erection. When this is completed the Company will have one of the best and most completely equipped batteries in Western Australia. The excavations for the tramway from the various shafts to the mill are also being rapidly proceeded with. The principal engine shaft on the south lease and the south pumping shaft have each been sunk and limbered to a depth of 115 feet, and in both shafts a considerable increase in the supply of water has been obtained.

CONSORT CONSOLIDATED.—The Johannesburg Consolidated Investment Company announce receipt of a report from the above company, containing the following: 500 foot adit north cross cut. We are still in the body of pyritic ore mentioned last week, which is dipping flatter than then, and at the end of the week we struck the foot wall, giving the reef there a thickness of about 2 feet; as it dips south it increases in width, and at the middle of cross-cut there is 4 feet of it. We have not tried the thickness of mouth of cross-cut. We are starting another cross cut to the west to prove it further. I had a sample assayed which gave 8 ounces 5 dwts. 440 foot level. During the week I started to cross-cut into five walls here to find the south reef, and succeeded very much sooner than I expected, as the bar is, in the place cut through, of very small width, and for a length of 40 feet along the level we have proved the reef to exist, to what thickness I do not know yet, but some of it contains good free gold, and lots of pyrites.

GOONGARRIE.—Extract from a letter just received from the mine manager, dated 27th March last: I have opened a large chamber at the 50 feet level, the dimensions of same being 8 feet high, 10 feet broad, and 12 feet in length, and driven cross cut into the lode but not through it; it is larger than usual, and shows a fair percentage of fine gold.

GINSBERG.—The Johannesburg Consolidated Investment Co. Ltd. announce receipt of a report from the above company, containing the following: Manager's report for March records a progress in mine development of 524 feet. The 10 stamp mill crushed 1,400 tons of ore, from which the yield of smelted gold amounted to 608 ounces, or an average of 9.68 dwts., and 1,000 tons of tailings were treated, yielded 329 ounces of gold, or an average of 6.59 dwts. per ton. Battery House—for the new 30 stamps—is completed, and good progress is being made with other surface works. Report for week ending April 7 states that the works are proceeding satisfactorily.

HAURAKI ASSOCIATED (Pride of Tokatea).—Extract from the *Auckland Star* of Thursday, March 19: Operations in this mine still continue of a very favourable description. The drive on the Rainbow end leader is now in a distance of 20 feet past the winze, and gold has been carried along the whole way. The reef in the face is at present about 12 inches in thickness, and the encasing country still maintains its kindly appearance. The winze on the footwall leader is down 40 feet, and colours and blotches of gold are still seen in the stone, which runs about 3 inches to 4 inches in thickness. When this winze connects with the low level, a fine block of country will be opened up for stoping, and something good ought to be met with when the above leader is stoped out. The drive on the footwall lead in the upper level is in 21 feet, and it is looking as well as ever. It is here 9 inches in thickness, shows gold whenever broken down, and every day specimen stone comes to hand from this source, the last lot advised of (38 lb.) coming from here. It can now be plainly seen that these two gold producing leaders are going to junction—*i.e.*, the Rainbow end and footwall, and it is quite possible that a rich pocket may be struck at this point. From the angle at which they are converging, a few feet of driving ought to solve the question. The manager has 208 lb. of picked stone on hand, some of it specimen stone of first class quality.

KLERKSDORP.—Extract from letter of Manager, dated Klerksdorp, 4th April 1896:—No. II. Shaft: We have been passing through exceptionally good ore in the south drift for some time back. Seven samples taken during the month over an average thickness of 3 feet 6 inches gave an average assay value of 1 oz. 1 dwt. 14 grs. In the north drift the value of the ore also continues very satisfactory, the assays showing an average value of 8 dwts. 11 grs. over a thickness of 4 feet. The ore raised to the surface during the month has been carefully sampled, and shows the much improved average value of 14 dwts. 19 grs. The ore raised and stacked during the month is 987 tons, of which the average value is, as above stated, 14 dwts. 19 grs.

MEYER AND CHARLTON.—Report for the month of March 1896: Mine—number of feet driven, sunk, and risen, 394 feet 6 inches; ore opened up by development, 8,684 tons; quartz mined, 8,195 tons. Mill—number of days (24 hours) working 60 stamps, 29 days; ore crushed, 7,200 tons; yield in smelted gold, 2,518 ounces 4 dwts. 19.2 grains; yield per ton, 6 dwts. 23.883 grains. Cyanide Works—tailing treated, 5,345 tons; yield in bullion, 939 ounces 12 dwts. 12.48 grains; yield per ton treated, 3 dwts. 12.382 grains; working cost per ton treated, 3s. 10.812d; Expenditure and Revenue: Working Expenditure—To Mining (including maintenance), £3,972 2s. 7d.; Transport, £84 2s. 9d.; Milling (including maintenance), £1,455 7s. 1d.; Cyanide Works (including maintenance), £1,050 7s. 11d.; General Charges, £999 17s. 10d.; Mine Development Account, £1,080; Profit for Month, £3,631 19s. 6d.; Total, £12,273 17s. 8d. Revenue—By Gold Accounts—2,518,240 ozs. from 60 Stamp Mill, at 73s. 6d. per oz., £9,254 10s. 8d.; 939.626 ozs. from Cyanide Works, at 60s. per oz., £2,818 17s. 7d.; 3,457,866 ozs.; Sale of Slimes, £149 19s. 5d.; Rents, £50 10s.; Total, £12,273 17s. 8d. Working costs (on basis of tonnage milled): Mining expenses, 10s. 4·556d. per ton; Transport, 2.805d. per ton; Milling, 3s. 0.185d. per ton; Cyanide works, 2s. 10.752d. per ton; General charges, 2s. 9.330d. per ton; Maintenance (mine, mill, and cyanide works), 1s. 8.436d. per ton; Mine development, 3s. 0.000d. per ton. Total working costs, £1 4s. 0.064d. per ton; Value of yield, £1 13s. 6.447d. per ton. Profit, 9s. 6.383d. per ton. Expenditure on capital account: Machinery, plant, buildings, &c., £3,352 11s. 5d.; Main incline shaft, £319 5s. 3d.; Total, £3,671 16s. 8d. Crushed during the month: Main reef, 1,890 tons; South reef, 4,594 tons; Leader reef, 716 tons. Very good results being now obtained from the south reef in the lower levels, the grade of the ore milled will shortly show an improvement.—George Albu, Managing Director.

MOUNT ROWE CONSOLIDATED.—The Manager, under date of March 25, reports as follows: Regina north. The driving along the reef at the 150 feet level is being pushed ahead rapidly. The north drive has been extended for the week 9 feet: total length of drive, 22 feet. The south drive has been extended 6 feet, making the total length of the drive 15 feet 6 inches. Width of reef in north drive averages from 5 feet to 5 feet 6 inches wide, and is very solid. All this stone gives a splendid result by panning and washing. The reef in the south drive is from 3 feet 6 inches to 4 feet wide, and is also very solid, and gives a good prospect. Some of the stone in both of these drives show visible gold to the naked eye. The gold in this reef generally is very fine and evenly distributed, and it is also free. General exemption has been granted for the whole of this week on account of the opening of the railway, and I have taken advantage of it; the first train entered Coolgardie on Monday, the 23rd inst.—Oil engine. The oil engine works splendidly, and is all that could be desired. I hope to be able to get the iron very shortly for the cages.

SPITZKOP FARM.—Under date April 8, the manager writes as follows, viz.: The quantity of developing driving done last month was most satisfactory, together with the prospecting driving, nearly 2,000 feet was accomplished. This, I am sure, beats any previous record in the district, and I anticipate that the current month will give as good a record. From the assay sheets forwarded, a very great improvement will be noticed in the value of the ore passed through the development drives. The following are the assays for March referred to—viz., Drive No. 1, 15 assays average 6 dwts. 8 grains; Drive No. 2, 16 assays average 14 dwts. 22 grains; Drive No. 3, 13 assays average 1 ounce 1 dwt. 1 grain; Drive No. 4, 18 assays average 13 dwts. 2 grains.

LIMERICK.—**Report from manager says: Nonpariel. Putting face on the large quartz blow preparatory to quarrying the stone. —Chord. North drive at 63 feet level has been extended 21 feet in ore 2 feet wide, value 2 ounces per ton. Tram lines laid,**

EXPORT AND IMPORT TRADE.

THE BOARD OF TRADE RETURNS—APRIL TABULAR STATEMENT.

Specially compiled for "The Mining Journal" from the Board of Trade Returns.

THE Returns show that the Imports for April amounted to £35,808,800, as against £34,341,358 for the same month 1895, an *increase* of £1,467,442. For the four months ended April 30 the *increase* was £12,949,312, the total being £148,104,142, as against £135,154,830. The Exports were £18,426,699, against £17,252,311, an *increase* of £1,174,388 for the month of April, and for the four months £79,659,742, against £69,972,672, an *increase* of £9,687,070. The Exports of Foreign and Colonial Merchandise show a *decrease* of £1,198,525, the totals being £5,411,590 and £6,608,115. There is, however, an *increase* of £749,059 for the first four months, the totals being £20,493,855 and £19,749,796.

EXPORTS:—SUMMARY OF INCREASES AND DECREASES

Principal and Other Articles	Quantities. Increase.	Quantities. Decrease.	Value. Increase	Value. Decrease
Raw Materials:				
Coal and Patent Fuel ... Tons	230,567	—	16,092	—
Coal, &c., shipped for steamers' use ... ... Tons	50,055	—	—	—
Metals:				
Brass, and manufactures of ... Cwts.	199	—	1,119	—
Copper, unwrought and wrought ... ... Cwts	—	5,737	13,389	—
Hardware and cutlery ... £	—	—	13,263	—
Implements and tools, and parts thereof ... £	—	—	458	—
Iron, unwrought and wrought Tons	63,874	—	461,656	—
Lead, pig, rolled, &c. ... ,,	61	—	3,289	—
Plate, and plated gilt wares £	—	—	—	2,671
Telegraph Wires, &c. £	—	—	—	12,478
Tin, unwrought ... Cwts.	132	—	—	2,505
Zinc or Spelter ... ,,	—	18	—	306
Other Articles ... £	—	—	10,228	—
			503,412	18,960
			18,960	—
Total	—	—	484,452	—
Machinery:				
Steam engines	—	—	49,438	—
Other descriptions	—	—	48,103	—
		—	97,541	—
		—	—	—
Total	—	—	97,541	—
Alkali ... ... Cwts.	—	20,571	—	8,749
Cement ... ... Tons	—	5,965	—	8,601
Products of Coal ... £	—	—	—	3,291

EXPORTS:—BRITISH AND IRISH PRODUCE.

Principal and Other Articles	Quantities. Month ended April 30. 1895. Cwts.	1896. Cwts.	Values. Month ended April 30. 1895. £	1896. £
Metals and Articles Manufactured therefrom (except Machinery):—				
Brass, and Manufactures of, not being Ordnance	9,368	9,567	36,290	37,409
Copper: Unwrought, in Ingots, Cakes, or Slabs, and Precipitate:				
To Germany	10,376	9,529	21,284	22,244
,, Holland	10,661	14,049	22,627	33,413
,, Belgium	2,130	3,586	4,565	8,408
,, France	16,342	11,881	34,528	28,330
,, Italy	1,795	720	3,814	1,600
,, British East Indies ...	82	30	178	80
,, Other countries	2,844	7,741	6,072	19,300
Total	44,230	47,516	93,668	113,373
Wrought, or Manufactures, unenumerated:				
To Sweden and Norway ...	765	1,727	2,242	4,934
,, Germany	317	1,169	1,226	3,120
,, Turkey	3,584	2,563	9,021	7,074
,, Egypt	1,988	2,379	4,984	6,093
,, Brazil	1,154	1,715	3,401	4,866
,, British East Indies ...	11,020	8,367	25,412	20,921
,, Australasia	344	1,931	1,088	5,715
,, Other countries	9,839	6,413	24,745	19,549
Total	29,010	25,954	72,119	72,273
Mixed or Yellow Metal:				
To China and Hong Kong ...	3,571	4,030	6,739	8,030
,, British East Indies ...	22,036	15,905	42,630	33,068
,, Other countries	6,403	6,060	14,070	14,861
Total	32,012	26,045	63,429	56,959
Total of Copper	105,252	99,515	229,216	242,605
Hardware and Cutlery ...	—	—	149,540	162,803
Implements and Tools, and parts thereof	—	—	107,905	108,374
Iron and Steel: Pig-iron:	Tons.	Tons.	£	£
To Russia	1,368	1,851	3,928	4,544
,, Sweden and Norway ...	5,110	3,890	9,789	9,194
,, Denmark	937	1,344	2,106	2,641
,, Germany	37,051	31,469	69,928	65,276
,, Holland	7,332	11,620	15,912	26,130
,, Belgium	4,893	2,896	11,334	9,645
,, France	4,269	2,470	9,565	6,143
,, Portugal, Azores, & Madeira	1,487	1,138	2,331	2,115
,, Spain and Canaries ...	4,585	2,518	9,588	5,170
,, Italy	3,108	5,413	18,433	9,942
,, United States	1,268	3,219	6,467	18,358
,, Australasia	2,766	754	6,371	1,961
,, British North America ...	439	233	1,510	820
,, Other countries	8,484	10,117	17,729	21,695
Total	83,077	78,532	184,891	183,834
Bar, angle, bolt, and rod ...	9,100	16,395	53,434	99,810
Railroad of all sorts	22,727	64,752	97,010	313,174
Wire, Iron and steel &c. ...	2,864	3,817	54,168	63,947
Hoops, plates, boiler plates, &c.	6,306	9,246	43,406	67,397
Galvanised sheets	19,413	22,919	209,684	263,686
Cast and wrought iron, &c. ...	33,777	27,433	303,634	254,081
Old, for re-manufacture ...	4,824	13,582	11,562	35,529
Steel, unwrought	17,345	20,856	157,274	191,625
Black plates for tinning ...	2,790	3,803	27,931	36,876
Manufactures of steel, or of Iron and steel combined ...	1,475	3,731	44,140	82,194
Total of iron and steel (including tin plates and sheets)... ...	225,459	289,333	1,506,329	1,967,985
Tin Plates and Sheets:				
To Russia	2,023	9	24,405	257
,, Germany	331	1,853	4,145	22,361
,, Holland	643	553	8,224	7,257
,, France	923	1,202	11,151	14,114
,, Portugal, Azores, and Madeira	286	907	3,508	10,876
,, Italy	357	151	4,303	1,895
,, Roumania	284	913	3,423	10,172
,, United States	15,946	10,903	191,023	122,926
,, Brazil	286	441	2,236	4,804
,, Argentine Republic ...	103	416	1,167	4,258
,, British East Indies ...	914	1,655	9,994	18,745
,, Australasia	1,503	1,610	17,470	18,080
,, British North America ...	789	1,096	8,703	11,232
,, Other Countries	2,373	2,558	29,213	29,275
Total	26,761	24,267	319,965	276,232
Lead: Pig Sheet, Piping, and Manufactures;	Tons.	Tons.	£	£
To Russia	67	420	838	4,892
,, Germany	205	169	1,993	1,976
,, China and Hong Kong ...	335	246	3,349	2,846
,, Japan	130	328	2,519	4,458
,, United States	328	—	3,236	—
,, British East Indies ...	931	850	12,535	12,691
,, Australasia	29	103	373	1,390
,, British North America ...	114	139	1,812	1,591
,, Other countries	693	757	8,702	9,692
Total	2,941	3,002	36,047	39,336

BRITISH AND IRISH PRODUCE—*Continued.*

Principal and Other Articles	Quantities. Month ended Apr. 30. 1895	1896	Value. Month ended Apr. 30. 1895	1896
Plate & Plated & Gilt Wares	—	—	24,586	21,215
Telegraphic Wires, & apparatus connected therewith ...	—	—	33,544	23,088
Tin, Unwrought:	Cwts.	Cwts.	£	£
To Russia	2,401	3,939	7,863	12,707
,, Sweden and Norway ...	928	440	3,015	1,412
,, Germany	1,357	771	4,437	2,302
,, France	956	603	4,869	1,947
,, Turkey	472	726	1,585	2,412
,, United States	264	—	901	—
,, British North America ...	191	577	630	—
,, Other countries	2,768	2,363	9,611	7,942
Total	9,337	9,469	32,911	30,409
Zinc or Spelter: Unwrought and Wrought	16,878	18,860	12,222	11,810
Total of Principal Articles ...	—	—	2,170,891	2,045,115
,, other Articles	—	—	61,192	71,420
Total of Metals and Articles Manufactured therefrom (except Machinery)	—	—	2,232,083	2,116,535
Alkali	484,611	464,040	137,488	111,739
	Tons.	Tons.		
Cement	26,115	30,150	57,775	49,174
Products of coal (including paraffin, petroleum, &c.) ...	—	—	166,105	162,011

MACHINERY.

Mining: (Not Steam Engines.)	Apr. 1895 £	Apr. 1896 £	4 months '95 £	4 months '96 £
To Countries in Europe ...	1,598	643	5,180	4,467
,, United States	739	576	1,320	671
,, Countries in South America	2,238	1,702	10,071	15,137
,, British Possessions in S. Africa	34,817	70,228	117,764	232,869
,, ,, East Indies	3,630	2,417	12,193	10,113
,, Australasia	8,665	21,376	18,614	94,373
,, Other Countries	4,909	3,987	15,552	15,318
Total	56,596	100,939	180,694	373,949
Total of Machinery other than Steam Engines	1,053,101	1,110,292	3,723,383	4,511,277
Total of Steam Engines ...	219,383	268,828	753,168	946,282
Total of Machinery and Mill Work	£1,272,489	£1,379,093	£4,476,551	£5,458,493

EXPORTS OF FOREIGN AND COLONIAL MERCHANDISE.

Principal Articles.	Quantities. Month ended Apr. 30. 1895	1896	Values. Month ended Apr. 30. 1895	1896
Copper:	Tons.	Tons.	£	£
Unwrought and part wrought	501	858	29,595	29,572
Iron and Steel:				
Bar, angle, bolt, and rod ...	572	1,741	4,230	9,789
Steel, unwrought	456	522	5,422	6,011
Manufactures:				
Girders, beams, and pillars ...	49	60	139	472
	Cwts.	Cwts.		
Unenumerated	51,722	54,763	41,316	43,615
	Gals.	Gals.		
Petroleum	102,730	124,300	3,630	4,531
	Lbs.	Lbs.		
Quicksilver	374,382	322,895	32,216	23,770
	Cwts.	Cwts.		
Saltpetre	4,629	4,580	4,266	4,421
Tin, in blocks, ingots, bars, or slabs	20,507	25,127	97,874	79,918

IMPORTS.

SUMMARY OF INCREASES AND DECREASES.

Principal and Other Articles.	Quantities. Increase.	Quantities. Decrease.	Value. Increase.	Value. Decrease.
Metals:			£	£
Copper: Ore ... Tons	—	5,973	—	13,402
,, Regulus ... ,,	2,068	—	55,952	—
,, Unwrought and part wrought	1,431	—	84,988	—
Iron: Ore ... ... ,,	145,087	—	68,753	—
,, Bar ... ... ,,	1,414	—	12,127	—
,, Steel, unwrought ,,	—	157	—	423
Lead: Pig and sheet ... ,,	1,870	—	36,689	—
Pyrites of Iron or copper ,,	14,129	—	24,961	—
Quicksilver ... ... Lbs.	—	67,218	—	5,631
Silver Ore	—	—	—	46,519
Tin, in blocks, &c. ... Cwts.	—	5,865	—	19,591
Zinc, crude ... ... Tons	1,772	—	29,613	—
Other Articles	—	—	104,306	—
			417,389	85,951
			85,951	—
Total	—	—	331,438	—
Chemicals:				
Alkali ... ... Cwts	5,800	—	—	257
Brimstone ... ... ,,	—	3,550	—	1,279
Saltpetre ... ... ,,	17,194	—	12,239	—
Iron Manufactures:				
Beams, girders, &c. ... Tons	982	—	5,155	—
Unenumerated ... ... Cwts.	30,448	—	85,864	—
Zinc Manufactures ... ,,	—	1,927	—	2,273

FOREIGN AND COLONIAL PRODUCE.

Principal and Other Articles.	Quantities. Month ended Apr. 30. 1895.	1896.	Value. Month ended Apr. 30. 1895.	1896.
Copper:	Tons.	Tons.	£	£
Ore:—From Spain	5,983	—	14,024	—
,, Italy	—	400	—	1,000
,, United States	42	70	714	1,400
,, Venezuela	—	—	—	—
,, Chili	1,384	118	9,062	2,000
,, Cape	1,082	2,477	10,820	24,770
,, British N. America ...	—	—	—	—
,, Other countries ...	1,026	492	13,862	4,653
Total	9,517	3,547	48,482	33,823
Regulus and Precipitate:				
From Portugal	1,000	—	30,000	—
,, Spain	3,768	4,857	98,364	119,257
,, United States	1,062	1,853	29,482	53,710
,, Chili	9	170	130	2,805
,, Other countries ...	1,841	7,938	34,540	73,795
Total	7,680	9,748	191,516	247,868
Unwrought and part Wrought:				
From United States ...	974	2,107	29,502	102,036
,, Chili	1,614	1,400	63,814	65,500
,, Australasia	653	606	27,564	27,551
,, Other countries	545	1,004	27,650	45,351
Total	3,786	5,217	152,970	237,938
Iron and Steel:				
Iron ore: From Spain	329,783	462,054	223,160	303,674
Iron ore: Other countries	47,737	60,583	48,279	59,588
Total	377,550	522,637	271,439	363,262
Iron, bar, angle, bolt, & rod ..	2,194	3,648	16,187	25,314
Steel, unwrought	689	512	7,177	6,754
Lead, pig and sheet	11,278	13,148	110,095	140,794
Pyrites of iron or copper or sulphur	50,572	64,701	85,246	113,807
	Lbs.	Lbs.		
Quicksilver	90,000	22,784	7,700	2,275
Silver Ore	—	—	137,341	90,422
Tin, in blocks, ingots, bars, or slabs:	Cwts.	Cwts.		
From Straits Settlements ...	34,200	24,870	104,725	74,396
,, Australasia	2,420	4,800	7,808	14,960
,, Other countries ...	5,663	6,848	16,322	20,745
Total	42,283	36,518	128,855	109,097
Zinc, crude in cakes ... Tons	3,744	5,516	84,654	94,867
Total of principal articles ...	—	—	1,211,460	£1,438,572
,, other articles	—	—	140,447	244,753
Total of metals	—	—	1,351,907	1,683,325

METAL TRADE STATISTICS.

APRIL, 1896.

COPPER.

(From Messrs. Henry R. Merton and Co.'s Circular for April, 1896).

	Apr. 30, 1896.	Apr. 15, 1896.	Mar. 31, 1896.	30TH APRIL. 1895.	1894.	1893.
STOCKS IN ENGLAND AND FRANCE:—	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Liverpool and Swansea, Chili Bars	28,265	29,151	30,008	38,656	31,301	30,272
" " Chili Ingots	195	171	171	737	556	48
" " Chili Ores and Regulus (fine)	2	2	2	132	92	512
" " Other Stuff (fine) & English Copper	1,965	3,424	2,271	5,016	4,630	3,972
London (including landing)	993		889	4,895	5,406	7,227
Stocks of fine Copper in Havre, Rouen, Bordeaux and Dunkirk	2,826	944 2,559	2,489	802	1,221	6,463
	34,246	36,251	35,830	50,239	43,206	48,094
AFLOAT FROM CHILI by Mail and Cable, Fine Copper	3,100	2,400	3,150	3,000	2,800	3,200
" " Australia, by Mail and Cable, Fine Copper	1,100	900	1,000	1,000	800	800
	38,446	39,551	39,980	54,239	46,806	52,094
Price of Chili Bars and G.M.B.'s per ton	£45 7 6	£44 12 6	£44 17 6	£40 17 6	£39 17 6	£44 10 0

COMPARATIVE STATEMENT.

—	Stock in England and France and Afloat thereto from Chili and Australia.	Price of G.M.B.	Supplies: England and France.	Supplies: Other European Ports.	Supplies: England & France from Spain and Portugal (excluding Pyrites).	Supplies: England & France from Other Countr's.	Charters from Chili to Europe.	Shipments from Australia to London.	Total Suppl's	Total Deliveries.
			From N. America.							
Month ending	Tons.		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
30th April.....1896	38,446	£45 7 6	4,173	5,802	919	3,632	2,050	850	17,426	18,960
31st March ..... "	39,980	44 17 6	3,031	6,593	1,116	3,844	2,250	600	17,434	20,935
29th February... "	43,481	46 10 0	4,377	3,919	933	812	1,700	700	12,441	15,588
31st January ... "	46,128	43 17 6	3,173	4,466	1,339	3,161	2,100	850	15,639	15,328
31st December...1895	45,817	41 2 6	2,807	4,919	2,036	2,401	1,809	650	14,613	14,527
30th November... "	45,731	43 2 6	1,805	3,069	1,334	1,617	1,450	900	10,176	14,827
31st October ..... "	50,383	45 2 6	923	3,250	1,386	2,960	2,300	700	11,119	13,579
30th September "	52,843	46 7 6	804	3,301	837	1,379	1,500	650	8,471	11,060
31st August ..... "	55,432	47 0 0	590	3,903	912	2,282	1,800	750	10,237	12,622
31st July ..... "	57,817	45 7 6	2,409	3,627	1,387	2,504	1,700	500	12,177	12,542
30th June ..... "	58,182	42 7 6	2,128	6,472	1,775	6,874	2,100	600	19,949	15,978
31st May ..... "	54,211	43 0 0	2,015	3,415	442	703	2,300	800	9,675	9,703
			28,775	52,326	14,416	32,189	23,050	8,600	159,356	175,149
30th April.....1895	54,239	40 17 6	1,608	4,069	2,318	1,611	2,700	700	13,006	12,102
31st March ..... "	53,335	39 5 0	1,636	2,278	1,151	2,991	1,250	850	10,156	12,011
28th February... "	55,190	39 0 0	2,430	1,020	1,542	1,519	1,550	650	8,711	8,369
31st January ... "	54,848	40 5 0	4,626	2,617	773	2,424	1,650	750	12,840	12,656
31st December...1894	54,664	41 0 0	3,839	2,954	1,636	2,366	2,300	650	13,745	11,376
30th November... "	52,295	39 15 0	2,103	2,652	1,535	1,235	1,250	500	9,305	9,798
31st October... "	52,788	40 15 0	2,869	1,231	1,334	1,088	1,850	600	8,972	8,218
30th September "	52,134	41 10 0	1,604	5,287	909	1,573	1,500	450	11,523	11,898
31st August ... "	52,407	40 7 6	3,026	3,382	1,494	3,973	2,000	550	14,425	13,343
31st July ..... "	51,325	38 2 6	3,455	3,770	1,209	1,816	1,800	550	12,600	11,347
30th June ..... "	50,072	38 5 0	2,726	4,250	858	3,522	2,300	650	14,306	11,814
31st May ..... "	47,580	38 17 6	2,778	3,362	1,978	3,023	1,650	650	13,539	12,765
			32,902	38,902	16,735	27,141	22,000	7,450	143,130	135,697
30th April..... 1894	46,806	39 17 6	3,559	3,826	1,057	2,977	1,650	600	13,669	13,460
31st March ..... "	46,697	40 15 0	2,548	4,591	1,184	1,699	1,503	550	12,070	12,837
28th February... "	47,364	41 0 0	3,198	2,392	647	754	1,950	550	9,501	9,289
31st January..... "	47,152	41 5 0	4,921	2,798	1,477	890	1,350	500	11,934	12,077
31st December... 1893	47,295	42 15 0	3,848	4,445	1,687	852	2,700	500	14,032	13,564
30th November... "	46,827	43 0 0	6,146	1,675	1,332	5,684	1,400	1,450	16,687	17,900
31st October ..... "	48,040	42 2 6	7,097	4,646	999	3,082	2,200	000	18,024	18,888
30th September "	47,904	41 17 6	7,940	5,191	1,255	621	1,700	600	20,307	20,364
31st August..... "	47,961	41 12 6	4,272	4,855	1,535	645	1,500	400	13,207	15,729
31st July ..... "	50,483	41 12 6	4,236	2,945	614	2,607	2,400	400	13,202	12,671
30th June..... "	49,955	43 10 0	1,914	3,195	1,958	2,548	1,850	550	14,015	12 011
31st May ..... "	49,951	43 2 6	3,179	1,303	1,291	1,271	1,750	450	9,244	11,387
			52,856	44,880	15,036	23,640	21,950	6,550	164,892	170,180

TIN.

(From Messrs. A. Strauss and Co.'s Circular for April, 1896).

	Mar. 31, 1896.	April 30, 1896.	April 30, 1895.	April 30, 1894.
	Tons	Tons.	Tons.	Tons.
Straits and Australian spot	16,504	16,495	9,987	6,204
Ditto ditto landing	162	328	1,047	1,064
Straits, afloat	1,775	2,172	3,300	3,025
Australian, afloat	400	447	393	475
	18,941	19,442	14,727	10,768
Banca, on Warrants..	1,919	1,660	1,050	443
Billiton, spot	1,586	1,820	1,657	1,149
Ditto afloat	962	1,195	1,110	1,240
Straits, spot in Holland	1,152	678	1,130	855
Ditto afloat to Continent	875	1,350	1,575	1,040
Stored secretly in Holland in 1894	1,548	1,087	2,250	—
	26,983	27,232	23,299	15,495
Total afloat for United States	1,550	1,960	725	1,230
Estimated stock in America	3,025	2,000	3,840	450
Total	31,558	31,192	27,864	17,175
Prices of Straits and Australian	£60 10 0	£59 15 0	£64 0 0	£71 7 6
Deliveries during the month in London	1,600	1,484	1,207	1,730
Ditto ditto Holland	611	1,027	833	1,061
	2,211	2,511	2,040	2,791

Shipments during the month from Straits to London ... ... 1,700 Tons
" " " Australia to London ... ... 250 "
" " " London, Havre, and Holland to America ... 235 "
" " " Strait to America ... ... 850 "
" " " Australia to America ... ... 100 "
" " " traits to Continent ... ... 1,175 "

—	During 12 months ending Apr. 30, 1896.	During 12 months ending Apr. 30, 1895.	During 12 months ending Apr. 30, 1894.	During 12 months ending Apr. 30, 1893.	During 12 months ending Apr. 30, 1892.
Shipments from Straits to London ...	26,310	26,867	26,047	23,122	17,815
Shipments from Straits to America ...	9,965	5,940	2,925	9,660	8,490
Shipments from Straits to Continent ...	11,035	13,342	11,921	4,630	5,150
Ditto from Straits to Europe and America ...	47,330	46,149	40,893	37,412	31,453
Shipments from Australia to London ...	3,597	3,835	4,551	4,474	4,240
Shipments from Australia to America...	650	1,150	350	550	800
Deliveries of Tin in London	19,344	16,582	20,830	14,249	16,025
Deliveries of Tin in London and Holland ...	28,204	25,493	27,638	22,730	24,056
Ditto in London, Holland, France, and U.S.	57,854	53,728	55,980	45,933	46,030

Banca in Trading Company's hands and afloat 6040 tons.

PRICES: Straits and Australian spot ... ... £59 15 0 three months ... £60 7 6
English Common ingots ... ... 63 10 0 refined 65 10 0
Banca ... ... 61 0 0 Billiton 60 0 0

METAL CIRCULARS.

Messrs. HARRINGTON and Co.'s Copper Report, dated Liverpool, May 2, has the following:—Chili charters for the second half of April are advised as 1800 tons, against 250 tons for the previous fortnight, making 2050 tons for the month. The total since December 31 last is 8100 tons, and the quantity same time last year was 7150 tons. Exchange 17¾d. Since our last the market for G.M.B.'s has been irregular, but fairly active, about 9800 tons sold at £44 18s. 9d. cash and £45 3s. 9d., three months, up to £45 12s. 6d. and £45 18s. 9d. respectively, closing firm at £45 7s. 6d. cash and £45 13s. 9d. three months. The Anaconda Company have declared a dividend of 62½ cents for the first three months of this year, being at the rate of 10 per cent. per annum. The total stocks in Liverpool, Swansea, London, and Havre are 34,246 tons, against 36,251 tons on the 16th ult., showing a decrease of 2005 tons for the fortnight, but with an increase for the previous fortnight of 421 tons, makes a decrease for the month of 1584 tons. The stocks include about 1200 tons of copper sold, but not yet delivered to smelters. The visible supply for the fortnight is 38,446 tons, against 39,526 tons on the 16th ult., showing a decrease of 1037 tons. The month's figures show a decrease of 1595 tons. Refined and manufactured sorts are steady. Quotations being:—Tough cake £49 to £49 5s., best select £49 15s. to £50 5s., Indian sheets £53, strong sheets £56, and yellow metal sheets 4¾d. per lb. The sales of furnace material comprise—2000 tons argentiferous Australian matte, 1000 tons argentiferous American matte, and 1000 tons argentiferous Mexican matte, all on private terms.

	Tons fine.	Tons fine.	
Import of Chili copper during the past fortnight	855	against 618	same time last year.
Delivery of Chili copper during the past fortnight	1717	" 560	" "
Import of other copper during the past fortnight	2422	" 1846	" "
Delivery of other copper during the past fortnight	3331	" 2013	" "

The total imports of Chili and other copper into Liverpool and Swansea since January 1 have been 27,324 tons; deliveries during the same period 36,581 tons fine; for same time last year the figures were 22,559 and 22,827 respectively.

Quotations are:

	To-day.		April 16, 1896.
Chili bars	£45 7s. 6d. cash and £45 13s. 9d 3 months		£45 16s. 3d. cash and £45 2s. 6d. 3 months
" Ore	8s. 6d. to 8s. 9d.		8s. 3d. to 8s. 9d.
" Regulus or matte	9s. 3d. to 9s. 6d.		9s. 0d. to 9s. 3d.
Precipitate	9s. 6d. to 9s. 9d.		9s. 3d. to 9s. 6d.
	May 2, 1895.		May 2, 1894.
Chili bars	£41 6s. 3d. cash and £41 13s. 9d. 3 months		£39 8s. 9d. cash and £39 18s. 9d 3 months
" Ore	7s. 6d. to 7s. 10½d.		7s. 0d. to 7s. 6d.
" Regulus or matte	8s. 0d. to 8s. 3d.		8s. 0d. to 8s. 3d.
Precipitate	8s. 6d.		8s. 3d. to 8s. 6d.

Arrivals here during the fortnight of West Coast S. A. produce:—

	Ores.	Regulus.	Bars.	Ingots.
Cervantes (s) from Valparaiso	—	40	200	—
Orissa (s) from Valparaiso	—	—	637	—
	—	40	837	—

At Swansea.—Nil.

Stocks of Copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

	Ores.	Regulus.	Bars.	Ingots.
Liverpool	10	—	27,965	195
Swansea	—	—	350	—
	10	—	28,315	195

	Tons.		Tons.	Price of Cash Bars.
Representing about	29,462	fine copper against	29,324 April 16, 1896,	£44 18 3
" against	29,525	"	May 2, 1895	41 6 3
"	31,949	"	May 2, 1894	39 5 9
"	30,832	"	May 2, 1893	44 7 6

	Tons fine		Tons.
Stock of other copper contained in matte, foreign ore and Spanish precipitate	1965	against	3424 April 16, 1896. 5016 May 2, 1895.
Stock of Chili bars, ingots, and barilla in Havre, including Rouen and Dunkirk	925		282
Stock of copper other than Chili in Havre and Dunkirk	1691		521
Stock of Chili copper afloat and chartered for to date	3113		3119
Stock of foreign copper in London	993		4196

Tin.—Since our last the market for cash Straits has fluctuated between £59 17s. 6d. and £59 7s. 6d., closing to-day at £59 15s. 3d., Australian £61 2s. 6d., English £63 10s., and Peruvian £48 to £50, according to quality.—Sulphate of copper. Makers are firm at £19 10s. to £20 spot and forward, June £17 5s. to £17 10s., July £17. Lead during the past fortnight has been firmer, closing nearly at £11 2s. 6d. for Spanish, and £11 7s. 6d. for English.—Spelter. The market since our last has advanced, and closes firm at £16 7s. 6d. to £16 10s. for ordinary Silesian brands.—Quicksilver. Since our last the market has been quiet, closing steady at £6 13s. 6d. per bottle for Spanish.—Bar silver. Prices have fluctuated between 31d. and 31¼d. per ounce standard, closing to-day at 31⅛d. Antimony quiet, star regulus at £30 per ton. Ore irregular, about £7 to £8 for 50 per cent. good quality and produce.—Bank rate of discount. The rate has remained at 2 per cent. since February 22, 1894.

Messrs. HENRY BATH and SON'S Copper Report, dated May 2, says:—The Chili charters for the past fortnight are advised as 1900 tons. The latest exchange is 17¾d. With but little doing the price continued to give way until £44 17s. 6d was touched on the 22nd ult., then a steady advance carried the price to £45 10s. by the 28th, to be followed by a decline of £45 5s., though we closed last at a slight advance at £45 7s. 6d. cash and £45 13s. 9d. three months. There is again a large reduction in the stocks, the visible supply being also down by about 1100 tons. These figures must inevitably tell, but at the moment speculators are leaving copper alone, owing, it is said, to the uncertainty as to the quantities which may be coming from the United States. The shipments from the States are advised as 6120 tons, making 10,096 tons for the past month. The price of Lake copper has been steady at 10·75 to 10·87½ cents in New York, but yesterday it was cabled as 10·75 cents nominal. The arrivals and deliveries at Hamburg, Rotterdam, and Antwerp amount to 1218 tons. The imports of American copper into England have been 1935 tons and into France 620 tons, or 2555 tons, against 986 tons last year. Total actual deliveries for the fortnight have been 6700 tons, against 4695 tons imports. The stocks have decreased 2005 tons. Total visible supply shows 38,446 tons, against 39,551 tons last fortnight. We have no transactions in furnace material to report.

England and France.	Imports.	D'liv'r's.	Stocks.	Afloat & Chartered for.	Total visible supply.
Chili copper at Liverpool, Swansea and in France	935	1850	29,397	3100	32,497
Foreign copper in London, chiefly Australian and Japanese	304	229	993	1100	2,093
American copper at Liverpool, London, and Swansea	1935	1982	581	—	581
Other copper at Liverpool & Swansea	686	2124	1,384	—	1,384
English copper at Liverpool and Swansea	—	—	—	—	—
American copper in France	620	360	1,477	—	1,477
Other copper in France	215	135	414	—	414
Tons fine copper during the fortnight	4695	6700	34,246	4200	38,446
Against tons on April 17, 1896	6720	8299	76,251	3800	39,551
Against tons on April 2, 1896	6994	9039	35,830	4250	40,080
	1895.	1894.	1893.	1892.	1891.
Total visible supply, May 1	54,239	46,806	52,094	53,828	59,311
		1893.	1892.	1891.	1887.
Total visible supply, May 1	90,073	124,131	64,005	56,259	

Price of Chili bars same date:—£41 5s., £31 8s. 9d., £44 7s. 6d., £45 7s. 6d., £51 17s. 6d., £49 7s. 6d., £37 12s. 6d., £30 3s. 9d., £39 7s. 6d.

	1896. Tons fine.	1895. Tons fine.	1894. Tons fine.	1893. Tons fine.	1892. Tons fine.
Imports from Chili and Bolivia from January 1 to date	6,891	6,556	6,823	6,827	6,597
Imports from America from January 1 to date	15,295	12,485	14,300	10,671	9,067
	1891. Tons fine.	1890. Tons fine.	1889. Tons fine.	1888. Tons fine.	1887. Tons fine.
Imports from Chili and Bolivia from January 1 to date	6,246	3,232	10,194	12,380	10,016
Imports from America from January 1 to date	13,033	7,379	10,459	12,683	1,812

The shipments to Europe from America from January 1 to date are 37,560 tons as against 19,431 for the corresponding period last year.

The shipments afloat from America are estimated at 4000 tons.

Imports.—The arrivals from the West Coast have been as follows:—

	Ores.	Regulus.	Bars.	Ingots.	Barilla.
At Swansea—*Nil.*					
At Liverpool—					
Cervantes (s) from Valparaiso, &c.	—	40	200	—	—
Orissa (s) "	—	—	637	—	—
Serapis (s) "	—	—	15	65	—
Tons	—	40	852	65	= 935 tons.
Corresponding period of 1895	370	—	541	50	= 857 "
" " 1894	—	—	195	176	= 371 "
" " 1893	—	1009	823	303	= 1585 "
" " 1892	—	85	873	205	= 1116 "

Stocks.—We estimate the present available quantities of West Coast copper to be:—

	Ores.	Bars.	Ingots.	Barilla.
At Swansea	—	300	—	—
Liverpool	10	27,965	195	—
In France	—	210	371	125
	10	28,475	810	125

Representing about 29,397 tons fine copper against 30,312 tons April 17, 1896,
against 39,807 " May 1, 1895,
" 32,582 " May 1, 1894.
" 35,234 " May 1, 1893,
" 34,259 " May 1, 1892,

Supply of West Coast copper may be estimated from the following figures:—

	Tons.	
Actual stocks at Swansea, Liverpool, and in France	29,397	
Afloat and chartered for at date of last advices per mail and cablegram	3,100	
Total	32,497	against 32,712 tons April 17, 1896,

against same date 1895, stock 39,807 afloat, &c., 3,000 = 42,807
1894, 32,582 " 2,800 = 35,382
1893, 35,234 " 3,200 = 38,434
1892, 34,259 " 2,600 = 36,859

Quotations for West Coast copper are as follows:—

	To-day.	May 2, 1895.	May 3, 1894.	May 2, 1893.	May 3, 1892.
Ores	8/9 to 9/6	8/	7/6	8/10½	8/7½
Regulus					
Bars	£45 7/6-8/9	£41 5/	£39 8/9	£44 7/6	£45 7/6
Ingots, Uramenata	Nom.	Nom.	Nom.	£49 5/	£49 15/
Precipitate about	9/3 to 9/9	8/7½	8/4½	9/3	9/1½

For other descriptions we quote to-day:—Wallaroo, nominal; English tough, about £49 to £49 10s.; Burra Burra, nominal; English manufactured, about £56; best selected about £50 to £50 10s.; India sheets, about £53; G.M.B. copper £45 7s. 6d. to £45 8s. 9d. cash, and £45 13s. 9d. to £45 15s. three months. Sulphate of copper £18 10s. to £19 cash, £17 10s. forward. Tin quiet, closing at £59 15s. cash, £60 7s. 6d. three months. Spelter firm £16 10; English about £17; blende of 50 per cent. is worth about £3 5s., and calamine about £3 7s. 6d. Lead firmer £11 2s. 6d. to £11 3s. 9d.; with silver 50 to 80 ounces about £11 5s. to £11 10s.; lead ore of 70 per cent. is worth about £5 per ton.—Pig iron. Closing quotations for Scotch pigs are 46s. 4d.; Middlesbrough, 37s. 8d.; Hematite, 47s. 7½d. cash. Antimony quiet; Star regulus about £30; ore £8 to £8 10s. for 50 per cent. good quality and produce; crude about £14 per ton.—Quicksilver. The official price is reduced to £6 15s.; seconds dull at 1s. to 1s. 6d. less. Bar silver 31⅛d. per ounce standard.—Discount. The Bank rate remains at 2 per cent.

Messrs. JAMES LEWIS and SON'S Monthly Report on Ores and Metals, dated Liverpool, May 1 says:—Copper. Good merchantable copper has fluctuated considerably during the past month, the effect of the steady buying of cash by consumers being neutralised by sales of three months' prompt against purchasers of other copper, and by bear sales. From £45 on the 1st ult. cash advanced to £45 12s. 6d. on the 7th, fell to £44 2s. 6d. on the 13th, but again advanced to £45 11s. 3d. on the 20th, declined to £44 17s. 6d. on the 22nd, and closes to-day at £45 7s. 6d. The public transactions on the London Metal Exchange for the month have been on a moderate scale, and are returned at about 21,500 tons. In addition to this, considerable purchases and sales have been made here and in Glasgow. The stock of good merchantable copper which forms the basis of these transactions now amounts to only 29,755 tons against 47,873 tons a year ago. The extraordinary consumption of copper in Europe during the past four months is apparent from the fact that notwithstanding an increase of 17,092 tons in the export from the United States, the public stocks in England and France have decreased 8384 tons during this period. Should European consumption for the rest of the year continue on the same scale, and at present there appears no reason why it should not, and supplies from America and elsewhere not increase, as is probable, a further reduction of 16,768 tons in the public stocks will follow, bringing them down to about 17,500 tons by the end of the year—which means a "Copper Famine," representing only six weeks' consumption. The probable application of electrical traction to the London tramways is announced. Electricity is also likely to be largely used as the motive power of the light railways proposed by the Government, involving the use of a considerable quantity of copper. The trunk telephone lines are shortly to be extended by the Telegraph Department at a cost of £300,000, and a telephonic line between London and Berlin is proposed. Electric lighting is largely on the increase. For manufactured copper there is at present no demand for India. Best selected sold as high as £50 15s., to-day's value being £50 10s. for early, and £50 15s. for June delivery. In the United States there is more demand and trade is improving. A sale by the Calumet Company is shortly expected to be made at 11 cents, purchases being meanwhile made from second hands at this price, copper for early delivery being very scarce. Exports for the past month amount to about 10,079 tons, being swollen by the shipment of several thousand tons of argentiferous matte intended for treatment at the Natrona Electro-Depositing Works, which were entirely destroyed by fire in March. The Anaconda Company have declared a dividend of 62½ cents for the first quarter of this year, being at the rate of 10 per cent. per annum. The imports are 6606 tons, and deliveries 14,752 tons greater to date than during the same period last year. The total arrivals in England and France for the month have been 11,415 tons, and the deliveries 12,999 tons fine. Stocks have decreased 1584 tons, and the visible supply 1595 tons. The arrivals in England from Chili during the month have been 1438 tons and the deliveries 3157 tons fine, and from other countries 6790 and 7096 tons fine respectively. The arrivals here and in Swansea from the United States have been 1125 tons bars, 1030 tons ingots, and 1531 tons matte, equal to about 2983 tons fine copper, in London 528 and in France 885 tons fine. The Chili charters for the month are advised as 3050 tons, and Exchange 17⅜d. Sales of furnace material reported

are:- April 2, 1000 tons matte American argentiferous to arrive on privat terms. April 15, 500 tons matte American argentiferous to arrive on private terms. April 15, 300 tons ore Libiola to arrive on private terms. April 15, 100 tons ore Portuguese to arrive on private terms. April 17, 2000 tons Australian argentiferous to arrive on private terms. April 17, 1000 tons matte American argentiferous to arrive on private terms. April 17, 280 tons matte Mexican argentiferous to arrive on private terms. Quotations to-day are:- Chili bars and good merchantable copper £45 7s. 6d. for cash, and £45 13s. 9d. for three months' prompt, buyers. English best selected ingots £50 10s. to £50 15s., and tough cake £49 10s. to £49 15s. per ton, 9s. for ore of 20 per cent., and 9s. 3d. per unit for Chili regulus or American matte, free from silver.

Chili exports to April 30 are:-

	1891. Tons fine.	1892. Tons fine.	1893. Tons fine.	1894. Tons fine.	1895. Tons fine.	1896. Tons fine.
Exported to February 28 ...	3021 ..	4040 ...	3113 ...	3268 ...	3291 ...	3795
Loading on " ...	— ...	— ...	— ...	50 ...	— ...	—
Chart red to April 30	3554 ...	3157 ...	3074 ...	3127 ...	3956 ...	4308
	6575 ...	7197 ...	6187 ...	6443 ...	7247 ...	8103

Stocks of copper—(tons fine)

	May 1, 1891.	May 1, 1892.	May 1, 1893.	May 1, 1894
Chilian in Liverpool and Swansea	18,283	29,389	30,832	31,949
Chilian in France	16,063	4,873	4,402	633
American in Liverpool and Swansea	7,150	2,902	1,895	3,155
American in France	943	37	1,126	434
Sundries in Liverpool and Swansea...	1,871	2,919	1,798	1,472
Ditto in London	7,479	7,964	7,227	5,408
Ditto in France	737	689	535	154
English G.M.C. in Liverpool and Swansea	2,7 8	2,158	279	3
Total	55, 61	50,928	48,094	43,206

	May 1, 1895.	Mar. 1, 1896.	Apr. 1, 1896.	May 1, 1396.
Chilian in Liverpool and Swansea	33,525	33,415	30,181	28,462
Chilian in France.....	282	635	788	935
American in Liverpool and Swansea	2,704	696	578	581
American in France	337	1,437	1,367	1,477
Sundries in Liverpool and Swansea ...	1,412	1,648	1,693	1,384
Ditto in London	4,895	1,221	839	993
Ditto in France	184	399	334	414
English G.M.C. in Liverpo l and Swansea	—	—	—	—
Total	50,239	39,481	35,830	34,246

Afloat as advised by mail and cable to date:-

	May 1, 1891.	May 1, 1892.	May 1, 1893.	May 1, 1894.
From Chili...	1,947	2,440	3,121	2,799
From Australia	1,350	300	800	8,000
Total visible supply	58,658	53,668	52,055	46,805

	May 1, 1895.	March 1 1896.	April 1, 1896.	May 1, 1896.
From Chili	3,199	2,762	3,124	3,119
From Australia	1,000	1,200	1,100	1,100
Total visible supply	54,438	43,493	40,954	38,459

Quotations:—Bars, per ton £51 10s., £45 10s., £44 7s. 6d., £39 12s. 6d.. £41, £45 17s. 6d., £45, £45 7s. 6d. Ore per unit, 9s. 7½d., 8s. 6d., 8s. 7½d., 7s. 3d., 7s. 10½d., 9s., 8s. 10½d., 9s.

Gold 77s. 9½d. per ounce standard. Silver fell from 31½d. to 30⅛d. on the 14th ult., recovered to 31⅜d. on the 28th, and closes at 31⅛ i. per ounce standard. Quicksilver from second hands is quoted at £8 1s. 6d. per bottle. Sulphate of copper is very scarce for delivery this month, and closes with buyers at £18 10s. and sellers at £19 per ton. Lead, £11 7s. 6d. per ton for English soft Spanish £11 2s. 6d., rich in silver £11 7s. 6d. to £ 2 5s. per ton. Ore of 70 per cent. £4 14s. 7d. per ton and fine silver value. Antimony firm at £20 to £30 10s. per ton Nickel offers at 1s. 1d. to 1s. 2d. per lb. net. Tin has declined from £60 12s. 6d. to £59 11s. 3d. per ton. Bank rate of discount remains to 2 per cent.

REVIEWS.

Light Railways for the United Kingdom, India, and the Colonies. By J. C. Mackay (London: Crosby Lockwood and Son.)

The author advocates the adoption of light or "little" railways for the development of a new country, and also for the improvement of agriculture in countries already partly supplied by railways of main line standard. The arguments employed are sometimes quite sound and valid, but in other cases the author seems to have been led, in his evident anxiety to justify light railways under almost any circumstances, to use arguments which will not bear close scrutiny. For example, on page 28 he says that a narrow gauge line may be changed to one of the main line standard and gauge with "no difficulty," and "without any interference" with the traffic, and he instances the conversion of the Great Western from 7 feet gauge to the 4 feet 8½ inch gauge. Surely, he must have forgotten that in the preceding pages he has given as a very cogent reason for the adoption of a narrow gauge the fact that the radii of the curves may be so small as to permit the line following the contour of the country, and so saving first cost of construction. The radius for a 2 feet 6 inch gauge is given at 1½ chains on page 23, while that for the 4 feet 8½ inch gauge is 5 chains. If the narrow gauge is first laid with curves of 1½ chain radius, how can the wider gauge line possibly follow the same course with 5 chains radius? We fancy our author will admit it cannot do so, but must have the curves flattened. But he does not refer to this in the passage in question, and leaves it to be inferred that the additional cost of construction of the wide gauge line will be a small matter. We very much fear that in such circumstances the cost would be almost as heavy as if the wide gauge line were laid down *ab initio*.

Another instance in which we fear there is some mistake is on page 52. Here it is said that a "steam carriage" may be advantageously used on a light railway for passenger and parcel traffic. This, we doubt not, may be true, but when it is further asserted that such a vehicle can be constructed to carry as many as 100 passengers at speeds up to 37 miles per hour on a consumption of 7 lbs. of coal per hour, we may be pardoned for asking for particulars of this wonderful performance. Certainly in our experience we have never come across anything to equal this in efficiency of propulsion. Let us see what it means: 100 passengers cannot be reckoned at less than (say) 6 tons; the carriage itself, including coals and water, boiler and motor, cannot possibly weigh less than (say) 5 tons, and it will be extremely light at this figure. This gives a total weight of 11 tons, which has to be propelled at a speed of 37 miles per hour by a pull of 20 lbs.! The 20 lbs. is very simply calculated from the consumption of coal and the speed on the assumption that the power developed is equal to two effective horse power, and no non-condensing engine has yet been constructed for locomotive purposes which can do better than 3½ lbs. of coal per effective horse power per hour. We fancy the consumption of coal would very much exceed the figure given by the author.

It is admitted that light railways in Ireland are not a commercial success, but it is claimed that though this is so, they, nevertheless, are a good thing, because they benefit the country. Just so! and a great many undertakings besides light railways would conceivably benefit a country, but unless they pay their way it is somewhat difficult to justify their existence. Light railways, like other undertakings, should pay a dividend, however small, in addition to working expenses, otherwise they must be subsidised, and probably worked by Government or other public bodies, and in either case the management is very apt to be inefficient, thus making bad worse.

The author, in discussing the possibility of benefiting agriculture by the adoption of a system of light railways—presumably in Great Britain, though he does not say so—rather touches a weak spot on this question, when he says on page 16: "The lines must be worked by a company distinct from the main line, &c., &c. . . . and to adopt cheap means for gaining cheap ends." This all looks very like an admission that light railways will not pay in this country, unless under such management as is never realised continuously on this earth!

The book is principally of a commercial character, the technical and engineering side of the question being treated very sparingly and superficially. There are numerous very valuable tables largely financial in their bearing. The illustrations are very plentiful and well done, though there seems to be a decided lack of system and arrangement in the descriptions given of them.

Although a good case is made out for light railways in new countries, such as in most of our colonies, we confess we are of opinion that an improved system of road traction would be found to be the best for this country. Once the present ridiculous law with regard to traction engines is modified, we hope to see the advent of a light and improved traction motor which will be capable of traversing the macadamised roads without injury to them. These roads already ramify the country in all directions, and if they were somewhat improved they would afford the readiest and cheapest means of communication between the agriculturist and the consumer of his produce. Talking of light railways and passenger traffic, if these railways traverse a hilly country we don't envy the travellers. It was the misfortune of the present writer to travel over the West Highland Railway in Scotland on one occasion, and he has no desire to repeat the performance. Owing to the sharpness of the curves around hill and lake side, and the consequent great elevation of the outer rail, it was nearly as bad as a sea voyage, judging from the effect on the passengers. Nausea and sickness were quite prevalent throughout the train. Narrow gauge railways in a hilly country would presumably be at least as bad as this, and probably worse. Passenger traffic under such circumstances would, we predict, not be at all commensurate in volume with the population of the district, entailing as it would a species of martyrdom to which the average individual does not readily submit after having once undergone it.

Matte Smelting. Its Principles and Later Developments Discussed. By Herbert Lang. (The Scientific Publishing Company: New York and London. 1896.)

We are pleased to welcome this, the latest, addition to an already by no means small volume of literature devoted to matte smelting. Its subject is certainly one of the subjects of the hour. So many mines have, especially in following down gold chutes, come upon pyritic deposits, which, though rich in gold at times, are not amenable to standard methods of milling, that any new light upon the knotty problem how best to extract the precious metal from such ores, is sure to be gladly hailed by miners and metallurgists. To quote but one case in point, we may refer to the recent developments of pyritic ores at the famous Mount Morgan Mine in Queensland. It seems as though gold were travelling through the same cycle of processes that silver has already traversed; first, free-milling; then wet methods; finally, and often side by side with the latter, smelting processess. And whilst lead seems the naturally designed vehicle, as it is the concomitant of silver, so matte may be expected to play a similar part where gold is concerned.

Our author defines matte smelting as "the smelting of natural sulphides with the design of collecting their valuable parts in a quantity of artificial sulphides" or as "the smelting of ores composed of, containing, or giving rise to sulphides, for the purpose of collecting their values in a less quantity of artificial sulphides," and he goes on to state that arsenic or antimony can take the place of sulphur. He has made an attempt at their classification of mattes which, to our minds, falls far short of the standard he sets himself. He points out that hitherto mattes have been classed according to the metals which form their base; he next proceeds to demolish the term "speisse," as applied to asseniuretted and antimoniuretted compounds, and groups these latter with the mattes. The whole of his classification then consists of separating them once again under the names of arsenide and antimonide mattes. In other words, he leaves the classification exactly where he found it.

The object of the book is to compare lead smelting and matte smelting with special reference to the value of these processes as collectors of the precious metals, and the comparison comes out pretty strongly in favour of the matte. Some of the author's arguments are strong, and, as far as can be seen, sound; but we are not sure whether they really go much further than showing that when lead ores cannot be obtained, mattes form a very efficient substitute. We do not gather that, if he had the choice between collecting gold and silver in (say) an oxidised lead ore, or a poor copper pyrites, each of equal value as regards the base metal product, he would prefer matting in every case. Of course, as he well points out, in a pyritic ore both iron and sulphur act as fuels to a great extent, and hence pyritic smelting, in which the heat generated by the combustion of the above-named elements is utilised, is valuable where fuel is dear and scarce.

It is unfortunate for Mr. Lang that his work should appear so soon after the magnificent new edition of Dr. Peters' work, with which, as covering a portion of the same ground, it inevitably challenges comparison; this is more especially the case in the sections of the respective works devoted to pyritic smelting. Judged by this standard, Mr. Lang's book falls short in many respects of what an ideal work on matte smelting should be. Especially do we miss all that exact information respecting technical and financial details in which Dr. Peters' book abounds. Mr. Lang has confined himself to generalities, and has nowhere described thoroughly any one of the processes he refers to; he has also dispensed with any illustrations of the plant employed. His work is, therefore, addressed, not to the student, not even to the general metallurgist, but to the specialist who knows thoroughly every detail of the water jacket and the cupola smelter. Granted this amount of previous knowledge, many useful hints can be gathered as to the scope of matte smelting, and the conditions under which its employment is indicated. The book is, of course, not faultless, but shows everywhere signs of painstaking and progressive thought. We do wish, however, that Mr. Lang's language were more scientific and less American

DOMINION GOLD MINING AND REDUCTION COMPANY (LIMITED).

Extraordinary general meetings of the priority and ordinary shareholders of the above-named company were held on Monday, at which special resolutions was passed converting the priority shares into ordinary shares, and increasing the capital from £170,000 to £200,000 divided into 200,000 ordinary shares of £1 each. This company is operating as a mining and development company in the Lake of the Woods, Rainy River district, Ontario, Canada, and has already acquired a large number of mining properties some of which it has partially developed. The company owns two well equipped stamp mills, one of 10 and one of 20 stamps capacity, by means of which very satisfactory tests have been made of properties already purchased and under option. The object of increasing the capital is to provide working capital to acquire other properties, and to carry on extended operations.—(Communicated.)

The transfer books of the AUSTRALIAN BROKEN HILL CONSOLS (LIMITED) will be closed from the 11th to the 16th of May, both days inclusive.

NOTES ON SINKING TWO SHAFTS BY POETSCH'S FREEZING PROCESS, AT ONNAING, NEAR VALENCIENNES, FRANCE.*

By H. F. OLDS, (Student).

THE following notes refer to two shafts sunk by congelation by the Anzin Mining Company, at Onnaing, near Valenciennes, in France.

Strata.—About 3 feet below the soil where both shafts were sunk, loose sand was met with, which proved to be about 18 feet in thickness. A few feet below this loose sand, under argillaceous tertiary gravel, chalk occurred, which, for a depth of 70 feet, contained much water, the remaining few feet of the chalk being much cracked or fissured. The pressure was such that water spouted to the surface, as each bore hole cut through to the impermeable tertiary strata. The process of congelation alone permitted these difficulties to be faced with any chance of success, therefore the company employed Poetsch's system for boring in watery strata.

Poetsch's System.—The process consists in transforming the ground into a block of ice, by putting tubes down each bore hole, and circulating a solution of calcium chloride at 20° C. below zero through them. This process had been applied a few times in France, Belgium, and other countries, but the sinking of the two shafts at Onnaing presented more difficulties than those bored elsewhere, as the ground in this case had to be frozen to a depth of 300 feet, a far greater depth than had been attempted in any other part of the world. The shafts sunk were respectively 10 and 16 feet in diameter, and were 40 yards apart.

Method of Procedure.—On a circumference 85 feet for the larger shaft, and 66 for the smaller one, bore holes were sunk 1 metre (3 feet 3 inches) apart. In the larger shaft there were 20 bore holes, and in the smaller shaft 16 bore holes. Four holes were bored simultaneously, the daily advance being from 50 to 60 feet, and occasionally as much as 70 feet. At the top of each bore hole there was a covering to prevent the water from the clay from spouting to the surface.

Tubes for the Circulation of the Freezing Solution.—In each of the bore holes a double column of tubes was put down, to insure the circulation of the freezing solution. One of the tubes, about 1¼ inch in diameter, and open at its base, was placed in the interior of the other tube, about 4½ inches in diameter, closed at its lower end. The cold liquid brought by the pipes attached to the machine for freezing the solution was run into two reservoirs, placed at the head of the shafts, which distributed the liquid between the 20 bore holes of the larger shaft and the 16 bore holes of the smaller shaft. It descended the interior of the tubes of 1¼ inch diameter, came up again in the annular part, between that and the outer, and collecting again in both reservoirs attached to the pipes, was returned towards the refrigeratory machine. Valves placed on each bore hole permitted the regulation of the distribution of the solution between the various tubes. This regulation was facilitated by the indication of a thermometer, placed 6½ inches in the ground, on the exterior circumference of the bore holes, and at a distance of a little over 3 feet from each tube. The total length of the pipes underground reached over 4 miles.

The Freezing Liquid.—The freezing liquid is a solution of calcium chloride, constantly kept cold by its circulation in the refrigerators of the Linde machine, and constantly warmed again by its circulation down the centre of the tubes. The liquid mass in movement consists of 70 cubic metres of water, in which have been dissolved 30,000 kilos. of calcium chloride (over 29 tons). The machine for freezing is of 200 horse power, with four compressors. These send the ammonia gas into two refrigerators, and then drives it back at a pressure of 8 kilos. (about 17·5 lbs.) into two condensers, where it liquefies. A circulation of cold water is kept up around the condensers. The liquefied ammonia passes through the condensers into the refrigerators, where it is brought back again and kept in the gaseous state at a pressure of 1 kilo. (2 1-5 lbs.). The detained gas is aspirated by the compressors, and travels over anew the circle to be described. The cold produced by the vapourisation and detaining of the ammonia is transmitted along the walls of the refrigerator to the solution of calcium chloride. Two Burton pumps are each able to deliver 1 cubic metre per minute, assuring the circulation of cold water necessary for the liquefaction of ammonia gas in the condensers. Two other pumps of the same type, with twice the power, effect the circulation of the saline solution to the interior of the tubes around the refrigerator.

Temperature.—The temperature of the calcium chloride on leaving the refrigerators is —20° C.—*Volume.* The volume of saline solution which passes through the system of tubes is more than 3 cubic metres per minute.—*Charge.* The charge in the machine is 500 kilos. (9¾ cwts.) of anhydrous ammonia.—*Sinking.* The congelation being obtained, the miners commenced their work, sinking the shafts by using picks only.—*Tubbing.* The shafts were secured with iron tubbing by the ordinary method. The work of the freezing machine was not interrupted, and the congelation was maintained throughout.—*Plant.* The principal parts of the plant are as follows:—

Steam Machine (two cylinders).—

Diameter of each cylinder	..	21 inches.
Length of stroke..	..	3 feet 6 inches.
Diameter of fly-wheel ..	..	20 feet.

Freezing Machine (four cylinders)—

Diameter of each cylinder	.. 360 mm.	(1 foot 2 inches)
Length of stroke.. ..	.. 540 „	(1 „ 9 „)
Diameter of fly-wheel ..	.. 5½ metres	(17 „ 10 „)

Water Pumps (two pumps, each having two steam cylinders and two plungers).—

Diameter of plungers..	.. 178 mm.	(nearly 7 inches).
Length of stroke	.. 254 „	(„ 10 „).

At each stroke 25 litres (5½ gallons) are delivered.

Calcium Chloride Pumps (two pumps, each having two steam cylinders and 2 plungers.—

Diameter of plungers..	..260 mm.	(about 10 inches).
Length of stroke	..254 „	(nearly 10 „).
Delivery at each stroke	.. 50 litres	(11 gallons).

Condenser.—

Surface of each, 120 square metres (1288·8 square feet).

Refrigerator.—

Surface of each, 130 square metres (1398·5 square feet).

Number of Tubes.—

(36 interior tubes.)

Diameter ..	.. ..	30 mm. (about 1 1-6 inch).
Length ..	.. ..	93 metres (302½ feet).

(36 exterior tubes.)

Diameter ..	.. ..	4½ inches.
Length ..	.. ..	94 metres (303½ feet).

The above are the number and length of tubes down the bore

* A paper read before the first student's meeting of the Institution of Mining and Metallurgy.

holes. The length of tubes at the surface was about the same as those underground.

Cost.—The author has been unable to obtain the exact cost required for the sinking of both shafts. During his stay at Valenciennes to see part of the sinking of both shafts, however, he was informed that this system of sinking is so expensive, that the company would only use it when it was impossible to sink by any other method. It speaks well for the perseverance and skill of the engineers of this company that they successfully dealt with the carrying out of so difficult an undertaking. The author stated, since writing the paper, that he had ascertained the cost to be £8 *per diem*.

AMERICAN AND ENGLISH METHODS OF MANUFACTURING STEEL PLATES.

At the ordinary meeting of the Institution of Civil Engineers, on Tuesday last, Sir BENJAMIN BAKER, K.C.M.G., the President, in the chair, two communications dealing with English and American practice in regard to the equipment and working of rolling mills were read.

The first paper on "American and English Methods of Manufacturing Steel Plates" was by Mr. Jeremiah Head, M.Inst. C.E. Mild steel was made by the Bessemer acid, the Bessemer basic, the open-hearth acid and the open-hearth basic processes. Of these the two basic processes were suitable for phosphoric, and the two acid for non-phosphoric pig iron. Plates were made in England by the open-hearth acid, and in America by the Bessemer acid, and by both the open-hearth processes. The Bessemer basic process had scarcely yet obtained a footing in America because of the abundance of pure ores from the shores of Lake Superior. About three-fourths of the pig iron made from these ores was sufficiently free from phosphorus for the acid processes. The capacity of American open-hearth furnaces varied between 15 tons and 35 tons, and they produced 10 charges per week. In basic furnaces the slag was less abundant than in England, and was too poor in phosphorus to be a marketable by-product. Natural gas was still available in the Pittsburg district for heating, but was becoming scarce, and at its present price was as costly as producer gas, in spite of its much higher calorific value.

In England the intermediate process of cogging was now almost universal, whereas in the United States plates were usually rolled direct from ingots. The former plan permitted the use of larger ingots, and lessened the risk of wasters, as well as reducing the number of ingot moulds in use and slightly decreasing the waste in scrap. On the other hand, it entailed two reheatings instead of one. An American melting house, in which the ingots were poured from the top and subsequently cogged, was described. It was arranged on the ground-level, with the exception of a small pit for the reception of the casting-ladle. When full, this was lifted by an electric crane and poured into a series of ingot moulds, each standing on a bogie. These were then taken to the stripping house, where an overhead hydraulic stripper held the ingot firmly down and at the same time stripped off the mould. In a typical English melting-house the furnaces were on a charging platform, while the ingot moulds, standing in a casting pit, were filled from a travelling ladle. The moulds and ingots were lifted by steam cranes in front of the furnaces. A comparison of the number of lifts on the English and American systems showed an advantage in favour of the latter.

Ingot-soaking furnaces were heated by coal, or by producer or natural gas, except in one case in Scotland, where no external heat was applied. Vertical furnaces with the lids level with the floor were in favour both in England and America. Where direct rolling was adopted the ingot moulds were arranged in groups of six on a base plate, and were filled from below by ducts radiating from a central runner. The upper ends of ingots so made were usually sounder than if they were cast from the top.

The typical American plate mill consisted of a single stand of three chilled rolls, driven by a single cylinder, non-reversing engine through a set of three pinions. The middle roll, which was smaller in diameter than the other two, was not driven. A copious supply of water kept the rolls constantly cool. The live-roller tables in front and behind were pivoted, and were raised and lowered to admit the piece through the top or bottom openings. The English plate mill consisted of two stands of two rolls each, worked dry and driven by a pair of reversing engines. There were fixed live-roll frames on one side and a traversing one on the other.

The American method of rolling an ingot tapered in two directions into a rectangular plate of equal thickness was next described. In England, the cooling and flattening of the plate was effected on an iron-plated floor, and required a considerable amount of space and manual labour. During shearing the plate was manipulated by a gang of 12 men. A truck with universal motion had been introduced to assist in this operation, but had not been generally adopted. In America, the plates as they left the rolls moved slowly along a series of live rollers 360 feet long, cooling on the way. At the far end, having been inspected and marked in transit, they were delivered to the shears. During the shearing operation the weight of the plate was supported by a number of inverted castors, which allowed it to be moved horizontally in any direction. The sheared plate was deposited in the railway wagons by an electric crane.

The ratio of saleable plates to ingots was much higher in steel than in wrought iron manufacture, because of the smaller furnace waste and the smaller allowance necessary for shearing. A table was given comparing results where ingots were cogged and where they were rolled direct. A plate mill, supplemented by a cogging mill, had nearly twice the capacity of one not so assisted. The yield and output were largely influenced by the shape and size of the plates manufactured.

The turning of the rolls to ensure uniformity of thickness of the plates was a somewhat delicate operation. The central portion of the roll was apt to become hotter than the ends, and the differential velocities thus caused tended to produce buckling of the plate. To compensate for this the rolls were often turned slightly hollow. A fresh difficulty arose in rolling very broad plates by the springing apart of the rolls. This could not be altogether avoided, and could only be minimised by making the rolls as stiff as possible and keeping them cool.

The American standard plate mill was not suitable for very narrow or thin plates. It was, therefore, sometimes supplemented by a universal mill for strips of breadths not exceeding 8 feet. The English standard plate mill was smaller than the American, and was often supplemented by a larger mill for very broad plates, and also by a sheet mill.

Modern English plate shears were driven by a pair of reversing engines which were cable of cutting 2-inch plates without a fly-wheel, and were somewhat larger than American shears. The latter were driven by a single cylinder with a fly-wheel.

The SACRE ESTATES AND MINING COMPANY (LIMITED), has received the following advice by cable:—"Interim dividend declared 2s. per share. Books closed May 15 to 22 inclusive."

HIGH EXPLOSIVES AND SMOKELESS POWDERS.

At the Society of Arts on Wednesday evening Mr. HUDSON MAXIM read a paper on "High Explosives and Smokeless Powders." After dealing at some length with the subject of high explosives, explaining the great distinctive powers attached to the use of these in contrast to the more common substances, the writer, in referring to smokeless powders, proceeded:—

Several years ago, when smokeless powders were first being introduced, and competitive tests were being made mainly between them and the old black and brown powders, it was easy to meet the ballistic requirements then imposed. Many changes, however, have taken place since then; the high ballistic results attained by recent smokeless powders, together with the knowledge gained from experience as to the vital importance of securing permanent stability of the nitro compounds entering into their composition, have tended to place the present standard of excellence for a smokeless powder very high indeed. To be considered satisfactory to-day, a smokeless powder must have earned a reputation for stability, based upon tests severe enough to place that quality above question, and it must give ballistic results that were once deemed impossible.

Experience in the use of smokeless powders has developed many things not at first anticipated, and the knowledge from which have been evolved the best powders of the present time has been costly of attainment. Formerly the main object sought was to secure high ballistic results. The importance of effect of the gases of combustion upon the bore of the gun was not understood, but as powders containing very large percentages of nitro glycerine were introduced, and many large and valuable pieces of ordnance were destroyed, the dangers arising from erosion were realised. At the present nothing less than a perfectly stable explosive compound, and one adaptable to guns of all sizes, and which will produce very high ballistic results, and work a minimum injury upon the gun, will satisfy Government authorities.

The Maxim powder consists of about 90 per cent. pyroxylin or gun cotton, possessing a very high degree of nitration, with about 9 per cent. of nitro glycerine and from ½ to 1 per cent. of urea. It is a true colloid, being perfectly amorphous or structureless, and exceedingly hard and horn-like. The powder, which is made in relatively long cylinders, is perforated axially with a large number of small holes, so that a minimum of burning surface is presented to the initial flame of combustion, and a comparatively low initial pressure is secured. As in burning the perforations increase in diameter, the combustion surface and consequent evolvement of gases is greatly extended, so that the pressure is well maintained throughout the bore of the gun, and a maximum of propulsive energy is secured to accelerate the velocity of the projectile.

The products of combustion of gun cotton, or tri-nitro-cellulose, are well known to consist mainly of carbonic oxide. The Maxim powder consisting, preferably, of nine-tenths gun cotton, its products of combustion contain but little carbonic acid. Gun cotton alone does not contain oxygen enough in its composition to cause it to ignite and burn with sufficient readiness to constitute a practical cannon powder when made into a dense colloid. It is, therefore, necessary to add a quantity of some nitro compound richer in oxygen. Consequently nitro glycerine, which is very rich in oxygen, and resolvable completely into gases, has been found the most suitable smokeless oxygen bearing element that can be employed. Gun cotton powders made with an oxygen bearing salt of a metallic base, such as nitrate of barium, are only a compromise between smoky and smokeless powders; from the explosion of such powders there remains as smoke, and as deposit to foul the gun, a quantity of carbonate about equal to the original amount of nitrate used, consequently such powders are but semi-smokeless.

The high velocities with comparatively low pressures that are obtained with smokeless powders, containing a large percentage of nitro glycerine, are due to the large volume of gases and the enormous heat evolved by the nitro glycerine in combustion. This great heat of combustion, in connection with the high specific heat of the gaseous water produced, and forming a large percentage of the gases, gives the products of combustion of nitro glycerine a tremendous expansive power above that of any other ingredient that can be employed in a smokeless powder. This fact, coupled with the great increase in rapidity of combustion, as such a powder becomes heated in burning, has given nitro glycerine an excellent reputation as a constituent of smokeless powders from a ballastic standpoint. Furthermore, the ease and cheapness with which a colloid of gun cotton containing large percentages of nitro glycerine can be made, and the great difficulty and increased expense in making powders with a small percentage of it, has caused nitro glycerine to be used in excessive quantities, which has to a considerable degree counterbalanced the advantage due to its high ballistic value. The products of combustion of a smokeless powder containing a large percentage of nitro glycerine have been found to be very erosive in their action on the bore of a gun. This is probably due to the great heat, density, and richness in oxygen of its gases. Such powders overheat a gun very quickly, and consequently powder containing a large percentage of nitro glycerine has the double disadvantage of greater density of gases and enormously greater heat. At the temperature of explosion of powder in a gun, the elements of water produced in the reaction of explosion are dissociated, and exist as free hydrogen and free oxygen. Under the great heat and pressure, it is probable that the oxygen in the carbonic acid gas, as well as the free oxygen attacks the surface of the bore of the gun, and changes the character of the metal in immediate contact with the heated gases.

In the early smokeless powders, especially those made of compounds of soluble pyroxylin and nitro glycerine, it was supposed that the nitro glycerine actually held and retained the pyroxlyn in solution, but it has since been proved that the nitro glycerine is held by smokeless powders, whether made with high or low grade gun cottons, in much the same manner as water is held by a sponge; in fact, the pyroxylyn exists in smokeless powder in the shape of a very minute sponge-like substance, within the pores of which the nitro glycerine is held in a free state. It is possible, even with powders containing as little as 25 per cent. of nitro glycerine, to squeeze out the fluid in a pure state by subjecting a piece of the powder to great pressure between two smooth steel plates. Moreover, nitro glycerine was formerly supposed to be practically a non-volatile substance, but it is now known that it evaporates, though slowly, at all temperatures. All fine-grained smokeless explosives, such as rifle and shot-gun powders, containing percentages of nitro glycerine, lose a considerable weight on long exposure, owing to its fine state of division; and as the loss of a small percentage of nitro glycerine will greatly affect the ballistic results of smokeless powders; this is a very important item to be considered. With cannon powders, which are made in large grains or blocks, exposing a comparatively small surface for evaporation, the disadvantages due to this cause are reduced to a minimum. The tendency to evaporate is also greatly reduced by lessening the percentage of nitro glycerine employed. No objection can be sustained on this account against cannon powders containing a low percentage of nitro glycerine.

The difficulties hitherto encountered in the manufacture of a smokeless powder for large guns in the form of a colloid, consisting chiefly of gun cotton of the highest degree of nitration, known as tri-nitro-cellulose, have been removed by our processes; and the high ballistic results, heretofore thought obtainable only with a compound containing from 50 to 70 per cent. of nitro glycerine, have been exceeded by a compound containing only 9 per cent. of nitro glycerine.

The MYSORE GOLD MINING COMPANY (LIMITED) has sold the gold obtained during the month of March last, which realised £34,972 19s. 11d.

The gold obtained in March by the MYSORE WEST GOLD MINING COMPANY (LIMITED) has been sold for £2696 1s. 6d.

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes (May 7):—Market continues quiet, with but little doing. Tin without any improvement and quotations mostly nominal. Quotations:—Basset Mines (fully paid), 1 to 1¼; ditto (5s. paid), 5s. to 6s.; Carn Brea, 9s. to 10s.; Devon Consols, 18s. 9d. to 20s.; Dolcoath (fully paid), 14s. 6d. to 15s.; ditto (7s. 6d. paid), 6s to 7s.; East Pool, 2⅜ to 2½; Killifreth, 6s. 6d. to 7s.; Levant, 4 to 4¼; Polberro, 7s. 6d. to 8s. 6d.; Tincroft, 9s. to 10s.; West Kitty, 2 to 2¼; Wheal Grenville, 6 to 6¼; Wheal Kitty, 4s. to 5s.; Wheal Metal, 3s. 6d. to 4s.

Messrs. ABBOTT AND WICKETT, Stock and Share Brokers and Mining Share Dealers, Redruth, write under date of May 7:—There has been very little change to report in the Cornish Share Market during the past week. Business still continues limited, though there have been a few transactions in Dolcoaths and Killifreths. The East Pool and Wheal Agar difficulty appears somewhat approaching settlement, which should have a favourable effect upon the district. Quotations herewith:—Blue Hills, 1s. to 2s.; Basset Mines, 1 to 1¼; Carn Brea, ⅜ to ½; Dolcoath (fully paid), 14s. to 15s.; ditto (5s. paid), 3s. to 3s. 6d.; East Pool, 2⅜ to 2½; Killifreth, 6s. to 6s. 6d.; Polberro, ½ to ¾; South Crofty, ½ to ¾; Tincroft, ⅜ to ⅝; West Kitty, 2 to 2¼; Wheal Grenville, 5¾ to 6; Wheal Kitty, ½ to ¾; Wheal Metal (3s. paid), 3s. 6d. to 4s.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, Stock and Share Brokers, Queen's Chambers, 7, Market street, write, May 7 (noon):—During the past week a change has come over the upward wave in prices, at any rate as regards some of those lately in favour. Home rails had somewhat of a back set, but this market is irregular, there being several instances in which improvement is recorded, though these are eclipsed by the changes in the opposite direction. Still amongst the declines there are none of very particular moment as regards amount. Otherwise railways are all down, more or less, Americans, Canadians, and Mexicans sharing in the general decline. We need not amplify on above remarks *re* rails, either generally or otherwise, and as to these, beyond the feature of the activity in cycle shares (in which the "boom" has given place to general ease), we may content ourselves by drawing attention to the changes given in full hereunder.

ENGLISH RAILS.—Higher: Caledonians, ¼; Great Eastern, ⅜; Great Northern A, ¼; Great Western, ½; Midland, ¼.—Lower: Caledonian Deferred, ⅛ to ¼; Lancashire and Yorkshire, ¼ to ⅜; Brighton A, ⅜ to ½; Chathams, ⅜; Districts, ⅜ to ½; Berwicks, ½; Dover A, ½ to ⅝.

CANADIANS AND AMERICANS.—Lower: Aitchison, ⅜; ditto Income Bonds, 2½; Trunk Ordinary, 1-16; ditto Guaranteed, ⅜; ditto First Preference, ⅜ to 1; ditto Second Preference, 1; ditto Third Preference, ⅜; Mexican Rails, ¼ to ½; ditto Second Preference, 1; Central Pacific, ⅜; Milwaukees, ⅜; Denvers, ⅜; ditto Preference, 1½; Louisvilles, 1½; Eries, ⅜ to ½; Ontarios, ¼; Union Pacific, ½; Atlantic First, ⅛.

CONSOLS.—Lower: Two and Three-quarter per Cent., ⅛.

COLONIAL STOCKS, &C.—Higher: Canada Registered, ⅛.—Lower: Victoria Inscribed, 1.

CORPORATION STOCKS AND DEBENTURES.—Higher: Blackburn Three per Cent., 3 to 4; Dewsbury Three and a-Half per Cent., 5; Manchester Four per Cent., 1; Oldham Four per Cent., 6; Todmorden Three per Cent., 2.

FOREIGNERS.—Higher: Argentine Six per Cent., ⅜; ditto Five per Cent., 2; Brazilian Four and a-Half per Cent., 2; ditto Four per Cent., 1⅜; Italian Rentes, 1; Russian Four per Cent., ½; Turks D, ⅛.—Lower: Uruguay Three and a-Half per Cent., ⅜.

BANKS.—Higher: Imperial Ottoman, ⅛; Lancashire and Yorkshire, ⅜; London and Midland, ⅛; Manchester and County, ⅛; District, ⅛; Union of Manchester, ⅜.

INSURANCE.—Higher: Boiler Insurance and Steam Power, ⅛; Liverpool, London, and Globe, ⅛; Manchester Fire, 1-16; National Boiler, ⅛; Royal, ⅛.—Lower: Lancashire, ⅛ to 3-16; London and Lancashire, ⅛; Reliance Marine, 1-16; Union Marine, ⅛.

COAL, IRON, &C.—Higher: Bolckow (fully-paid), ⅛; Cammell's, 2½.—Lower: Bolckow (£12 paid), ⅛; Ebbw Vale, 1-16; Sheepbridge, A, ⅛.

TELEGRAPHS AND TELEPHONES.—Higher: West India and Panama, ⅛; National Telephone Third Preference, ⅛.—Lower: National Telephone, 1-16 to ⅛.

BREWERIES.—Higher: Allsopp's, 2; Bent's, ⅛; Chester's, ⅛ to 1; Manchester, ⅜; Springwell, ⅜; Trelfall's, ⅛; Wm. Yates, Preference, ⅛.

MISCELLANEOUS.—Higher: Armitage's, ⅛ to 1; Brunner Mond, ⅛; Chadwick's, ⅛ to ⅜; Coats, 1⅛; Eastmans, ⅛; Hetherington's, ⅛; Howard and Bullough, ⅛; Salt Union, ⅛; United Alkali, 1-16 to ⅛; Liverpool United Gas A, 2; Manchester Trust, 6d.; Suez Canal, 1.—Lower: Henry's, ⅛ to ⅛; London and Manchester Plate Glass, ⅛.

LATER (4 P.M.)—Home rails dull to-day, with lower prices as a rule, but not large declines in any case. In Americans but little has been going on, and on the small business figures are for the most part rather easier.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (May 7), writes:—During the past week markets have been firm. The news from Rhodesia is more encouraging, but affairs in the Transvaal are still unsettled. Hence dealings are restricted. The improving prospects of home trade are helping prices of many shares.

In shares of coal, iron, and steel companies, the principal alteration is a decline on Shott's iron to 16. The Marbella output for April has been 2233 tons; Steel Company B Debentures offered; Bolckow Vaughan are at 14¾; Marbella, 42s., Niddrie, 40s.; Stewart and Clydesdale, 11⅛; Steel Company of Scotland, 5.

In shares of copper concerns a fair amount of business has been done. Owing to the improving prospects of trade and reduced stocks of copper, Tinto advanced to 21⅛, but are now easier. Tharsis have touched 111s.; Arizona, 58s. 9d.; Central Chili, 10s. 6d.

In shares of gold and silver mines business has been quiet. Chartered fell from 72s. to 59s. 6d., but have recovered to 63s. 6d. Consolidated Gold Fields declined from 12⅜ to 11⅛ on announcement of the interim dividend of 10s., but have recovered to 11¼. East Rand and Randfontein have not fallen very much. Sheba declined from 44s. to 39s. 6d., as last month's crushing is smaller, and the quality of the ore is said to be decreasing. Broken Hill have declined from 52s. to 48s. Afrikander are at 28s. 6d.; African Estates, 42s. 6d.; Associated Western Australia, 40s.; Balkis Land, 5s. 6d.; Big Blow, 15s.; Blue Spur, 9s.; Crœsus South United, 45s.; Colon, 6d.; Cripple Creek Gold Fields, 15s.; Emma, 2s. 6d.; Eastleigh, 23s. 6d.; Great Reefs, 11s. 9d.; Gem of Cue, 2s. 9d.; Ginsberg, 42s. 6d.; Gold Coast Development, 3s. 9d; Hainault, 39s.; Imperial Corporation, W.A., 12s.; Klerksdorp, 16s. 3d.; Kapanga, 15s.; Lion Mozambique, 17s.; Lady Mary, 20s.; Mallina, 2s. 6d.; Mawson's, 13s. 9d.; Murchison New Chums, 9s.; Newfoundland Colonisation, 1s. 9d.; North Boulder, 13s.; New Queen, 8s. 6d.; Ottos Kopje, 1s. 3d.; Orion, 45s.; Paddington, 27s.; Rhodesia (Limited), 21s.; Sheriaw's, 13s. 9d.; South Luipaard's Viei, 1s.; Sam's Wealth, 3s. 3d.; Tamworth, 11s. 9d.; Umtali, 6d.; Violet, 15s.; Victory (New), 1s. 6d.; West Australian Gold Concessions, 37s. 6d.; West Australian Mining, 9s. 9d.; and Wealth of Nations Extended, 21s. 3d.

In shares of miscellaneous companies prices are generally better.

In oil companies Broxburn are at 10¾; Pumpherston, 7¾; and Young's 35s. 6d. Bradbury's Drill Sharpener are at 25s. Nobel Dynamite 18¾.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of May 7.—There has been a diminution in the volume of business, and a decline from the highest prices reached in railway stocks. Caledonian Deferred has fallen from 63 3-16 to 62⅝. North British from 50 1-16 to 49½, Glasgow and South Western from 130½ to 129½. Preference and Debenture stocks have advanced to still higher values. In insurance shares Edinburgh Life have risen from 54½ to 55, Life Association from 45½ to 46½, Liverpool, London, and Globe from 54½ to 55½, Royal from 54⅝ to 55½. Royal have receded from 228½ to 228, Union from 21 7-16 to 21 5-16. North of Scotland have improved from 9¼ to 9 3-16. British South Africa Shares have fallen from 70s. to 61s. 3d. Steel shares have improved from 98s. to 100s., Stewart and Clydesdale from 11½ to 11¾. Rio Tintos have improved from 20½ to 20⅝. Tharsis have declined from 110s. 6d. to 108s. In oils Broxburn have improved from 10 9-16 to 10¾, Pumpherston Preference from 9 3-16 to 9⅜. Youngs have declined from 37s. to 33s. 6d. Distillers have advanced from 21½ to 22 13-16, Coats from 38⅜ to 39⅛, Nobels from 17⅞ to 18⅛. Scottish Assam Tea have declined from 11¼ to 11.

ON THE MAKING OF THE MIDDLE LIAS IRONSTONE OF THE MIDLANDS.*

By EDWIN A. WALFORD, F.G.S., Banbury.

THE "Marlstone" or Lias Ironstone of North Oxfordshire rests upon the marls of the Middle Lias. For the most part it lies bare of its former covering of Upper Lias clays. Its maximum thickness is about 30 feet.

The ordinary quarry face shows the upper half of the stone of the usual red-brown colour, the lower half with alternating bands of red and green stone.

The object of this paper is to determine:—

1. The character of the stone and its organic origin.
2. The making of the stone and its ferruginous changes.

In its calcareous condition as a green limestone its proportion of iron scarcely exceeds 17 per cent., and it is in that condition that it offers to us the best evidence of its origin. Both in that condition, and also in its more weathered state, it can be seen to be made up of casts of recumbent cylindrical stems of coralliferous type. These lie upon the plane of bedding, and their ends protruding from the weathered faces of the rock are easily distinguishable in the old quarries. Their colour is lighter than the matrix. The infilling is commonly calcite, crowded with organic remains, and with few ferruginous oolites. A slab of the paving stone, the top rag of the quarrymen, shows, in the white flecking of its surface, sections and ends of the stems or tubular casts. In some cases they are detachable from the matrix. I first noticed them as a bed, at the point of junction of the Middle and Upper Lias, and have already called attention to them there, but not until late years has it become apparent that the main mass of the rock bed is made up of these organisms.

Minor bands or beds of the rock are composed of the segments of sea lilies (crinoids) or shells of mollusca. In proportion to the ferruginising of the rock, so has proceeded the obliteration of the remains of its former organic life.

In order better to understand the "Marlstone" series two sections are given. I give also brief descriptions of their various beds, beginning at the bottom—the incoming of the calcareous conditions:—

Bed 1. *The nodule bed.*—Red-brown impure ferruginous limestone. Black and brown shining nodules abundant; mainly derived from marls below or of organic origin. Remains of calcareous stem casts throughout. Oolites ferruginous, large, generally ovoid. Stone usually discarded as ironstone.

Bed 2. *Best rag.*—Dark green limestone. Percentage of iron 9 to 15. Calcareous stem casts indistinct. Their contents distinguishable in micro-sections. Oolites small, frequently hollow, with concentric banding, enclosing granules of grey or green ferrous carbonate. The iron carbonate occurs also in a finely disseminated condition or irregular patches.

Bed 3.—Brown impure ferruginous limestone, often with green cores.

Bed 4. *Top rag.*—Hard thin-bedded ferruginous limestones with grey-green cores. Remains of calcareous stem casts abundant, lighter colour. Oolites small, solidified, filled with granular opaque calcite, or calcitic concentric lamella. Ferrous carbonate finely granular; more frequently disposed around the oolites, or in patches.

Bed 5. *Road-stone.*—Red-brown calcareous ironstone. Calcareous stem casts abundant; shown in less ferruginised places or cores. Oolites small; solidified. The calcitic interiors stained and charged with iron oxide or pitted with decomposed granules.

Bed 6. *Transition bed.*—Limestone or marl, altered to an ochreous bed in places, 6 inches or less in thickness. Oolites large, often separable from matrix. Some ferruginous oolites disposed like cobbles of a village pavement. Base clear calcite with scattered organisms. Terebratulæ, ostracoda, &c., in transition state to oolites, and numerous, hollow oolites. Like the incoming time of calcareous deposit (the nodule bed), the outgoing time was one of shallow turbulent seas with abundant molluscan life, and with coral growth.

In each of the mentioned beds microscopic examination shows how largely the remains of crinoids, bryozoa, ostracoda, spongidæ and foraminifera entered into the composition of the rock as well as the calcareous stems and tube casts referred to.

In the railway section at Bloxham, near Banbury, the Upper Lias beds with some marlstone have been brought down on each side of a narrow strip of marlstone less than 50 yards broad. The stone on either side, protected by the clay covering, is mainly green, and shows the calcareous stems abundantly, whilst the uncovered rock is ferruginised and the organic remains for the most part washed out.

With the slow compacting of the blue and green muds of the "Marlstone" time came the replacement by calcite of the sculptured calcareous tests of the microzoa and the skeletons of bryozoa, and at a later stage still followed the infilling of their chambers with grey granules of ferrous carbonate. How solid were the cylindrical coralliferous stems, which made up so much of the rock can be inferred by the slowness of their decomposition and the rarity of the occurrence of ferruginous oolites within, though they may occur freely around the stems.

The best rag is a porous rock, soft enough to be cut with a hand saw. A clay seam frequently separates it from the nodule bed below. The top rag, on the contrary, like the road stone above, is compact and dry. The process of solidification has been carried on in these upper layers to a great degree. In the top rag especially is this solidification noticeable in the compactness of the oolites. In the roadstone the oolites appear to have decayed again after solidification—probably with the ferruginising of the beds. The seesaw of wet and dry seasons through the long ages has been an important agent in the alteration of the rock from the green state we see it under when well clay-covered, to its red-brown stage when uncovered and as an ironstone. Calcareous deposit first prior to the removal of the clays by denudation, ferruginous change later, with corresponding destruction of the calcareous rock in proportion as it became charged with iron. We know that enormous masses of sedimentary rock formerly spread above the present surface, clays, limestones, ferruginous sands, ferruginous limestones, and that each in turn was slowly destroyed by atmospheric agencies. And as the thousands of feet of Jurassic, and perhaps of Cretaceous, deposits were dissolved, each in turn contributed its store to the solidification or alteration of the rock below. The laminated banding of the oolites is evidence of the abstraction of lime from the water, which it has taken from the beds above to give up again with the alternations of condensation produced by the drying of the saturated rock.

In the altered state of the microzoa, and also of the larger organisms, is shown change after change of structure, until the fossil remains as it were a shadow of a former being. Under these conditions it is difficult to read aright the tangled story of a past time. Fortunately an occasional incoming of argillaceous deposit has packed away, in cores and pockets, fragments of the old life, often with the perfectness of a to-day's shore.

* A paper read before the Iron and Steel Institute.

TIN TICKETING.

THE fortnightly ticketing for tin ores was held at Tabb's Hotel, Redruth, on Tuesday. Result:—

VALUES OF ORES SOLD FROM EACH MINE.

Mines	Tons cwts.	Per ton. £ s. d.	Value. £ s. d
Dolcoath No A	14 0	37 5 0	521 10 0
do No. a	14 0	37 7 6	523 5 0
do No. 1b	12 0	37 7 6	448 10 0
Wheal Grenville A	15 0	38 15 0	581 5 0
do B	16 0	38 5 0	612 0 0
East Pool A	11 0	25 17 6	284 12 6
do B	11 0	26 5 0	288 15 0
do No, 2	1 0	11 15 0	11 15 0
Tincroft	10 0	32 2 6	321 5 0
do	9 0	32 2 6	289 2 6
do	1 10	14 2 6	21 3 9
Basset Mines (Limited)	16 0	38 15 0	620 0 0
do No. 2	4 0	24 17 6	99 10 0
Carn Brea No, 1	8 0	33 12 6	269 0 0
do No. 1a	7 0	33 2 6	231 17 6
do No. 2	1 0	19 2 6	19 2 6
Killifreth	14 0	36 15 0	514 10 0
West Kitty	13 0	38 17 6	505 7 6
Phœnix United	9 0	37 17 6	340 17 6
do No. 2	2 0	34 15 0	69 10 0
West Frances	8 0	32 10 0	250 0 0
South Condurrow	6 0	38 15 0	232 10 0
St. Agnes Beach	5 10	29 5 0	160 17 6
	208		£7226 6 3

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AVERAGE PRICES PER TON.

March 10	£35 5 10	April 21	£34 17 2
March 24	35 4 1	May 5	33 14 10
April 8	34 12 0		

VALUE OF ORES PURCHASED BY EACH FIRM.

	Tons.	£ s. d.
Carvedras	53 1-12	1914 4 9
Chyandour	60 1-12	2174 19 10
Williams	31 0	1118 7 6
Redruth	11 0	360 5 0
Penpoll	13 10	420 17 6
Cornish	39½ 0	1237 11 8
	208	£7226 6 3

The Ryans Company's tin from South Africa was also sold.

Purchasers.	Tons cwts. grs.	£ s. d.	£ s. d.
Carvedras	2 13 0	43 2 6	114 5 8
Chyandour	2 13 0	43 2 6	114 5 8
Cornish	18 12 0	42 12 6	792 16 6
Do.	5 0 0	38 12 6	193 2 6
	28 18 0		1214 10 4

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PAPER ON THE CUPREOUS PYRITES DEPOSITS OF ANDALUCIA AND ALGARVE.

RETROSPECTIVE AND PROSPECTIVE.

Extracts and Notes from Mining Operations and Reports on these during the past 25 years.

By WILLIAM GUTHRIE BOWIE.

(*Concluded from page 572.*)

It is, however, very gratifying to observe the changes now being made, and the abandonment of the wasteful process of calcination of this ore, not only as preserving the sulphur &c., for future uses, or producing more copper, and avoiding expenses and damages caused to others, but also because the agriculturists, being certain of no further unremunerated damages, can with safety improve their properties and increase their produce, or stock their holdings as these become again fit to support cattle, pigs, &c., which must afford employment to many, and cheaper supplies to all the mines. True it is that it will take many years to replace the destroyed vegetation and soil that its bare condition has permitted the rains to wash away, or the numerous orange groves, orchards and vines, pine tree plantations and oaks, that have been destroyed, or whose bleached skeletons or leafless trunks and branches are to be seen studding the parched surroundings of these mines calcining this ore, and which also extend over wide tracks for long distances, all blasted by the sulphur smoke and appear—

"As when Heaven's fire
"Hath scath'd the forest oaks, or mountain pines,
"With singed top their stately growth, though bare,
"Stands on the blasted heath."

And mark! the progress of this altogether unnecessary devastation, caused by these unfortunate and unscientific metallurgic processes, and together with the remembrance of the losses to both companies and land owners, stand as warnings to all to avoid such things in the future.

Mr. Douglas has well said that the cost of fuel, and sometimes of fluxes, makes it betimes more profitable to lose than to save. How far it is right to waste Nature's resources in order to realise immediate profits is a matter for the economist and legislator to decide, but here, in Andalucia, where the legislator has not been able, or has not cared, to prevent the desolation of the land, ruin of agriculture and its population, or the enormous waste of her mineral productions that have gone on in millions of tons for the past 25 years, then here it is Nature herself has come to the rescue of both miner and agriculturist, while the wiser legislators of Portugal have not only by their prohibition of calcination in the open air saved the lands of their subjects from destruction, but have also saved, perhaps against their will, the mining companies there, and enabled them to produce more copper, and now they have the bye-products of sulphur, &c., that have gone to waste in Andalucia, and which are now in Portugal, the saving of these companies from being non-dividend concerns.

Over Production.

Over production in copper is blamed as the cause of our present difficulties, and to remedy this, combinations are now and again endeavoured to reduce this production, while, at the same time, those at front of important producing mines for copper are endeavouring to introduce to the public, and exploitation, other new deposits that are reported as being both large and rich in copper ores. This anomaly indicates the impossibility of any such arrangements succeeding for this state of affairs, and the disposition of man for making gains when he can for himself, will always prevent any combinations being long observed, and even now, as has been the case in the past, there are shareholders in the Rio Tinto Company who would gladly see the millions of tons of copper, estimated by some, as existing in the ore of their mines put on the market at one swoop.

Some years ago £75 per ton of copper was considered low value, and companies complained that mining ore at this price did not pay them to work at 3 per cent. Cu. ore. Then followed £70, £60, and so on under £40, yet profits were forthcoming as before, from even a lower copper percentage ore, owing to improvements in mining and metallurgy, and economy in material and wages, and even in many instances profits have been made from poor copper ores at these low prices, that others with the best of values ever known have been thrown away as useless.

Everything is certainly exploited with great speed by the aid of chemistry, machinery, and metallurgy on improved scales, and hence copper mines all the world over are finding difficulties from less quantity and quality, and increasing expenses as depth is gained, and it is this ruling passion of man to exhaust Nature's stores of metallic treasures in his day that must bring reactions in value, while Nature has so mingled and hidden these treasures as to impede any lengthened period of spoliation, as have been evident in the past 25 years, and eventually there must be periods of forcible decline in production of any particular metal, as is evident in England, in the case of copper and now in Andalucia and Algarve, while again science labours to turn to profit the refuse of the past, and this will always be so in the future, and that by processes now unknown, that will put to shame our present uses, and all our much boasted knowledge.

Phœnicians, Carthaginians, and Romans have come, gone, and been forgotten, and their gigantic works buried in the dust. These last, our modern necessities have unearthed, and inventions utilised what they left as unfit for their purposes or uses. Over production may again render these ores useless, but they are more likely to be abandoned as being unable to treat them, and be consigned to oblivion, to be again up-rooted under new sciences and processes, or new uses that future generations may find them to be of utility and profit. And while poetical historians picture the coming "roving New Zealander" exploring the "broken arches of London Bridge and ruins of St. Paul's," we can fancy that some ideal individual crossing to these sunny climes, and enjoying the wholesome orange or luscious grape in the shade of some venerable oak, or hunting the wolf or the wild boar through the brakes and jungle that may have grown in the glens, that once were open casts of a Tharsis or a Rio Tinto, and yet dream not, even remotely, of what has been enacted beneath him in bygone days, or the storms, turmoil, and trouble of our mining operations.

The BALAGHAT MYSORE MINES (LIMITED) has sold the gold obtained during the month of March last, which realised £1110 6s.

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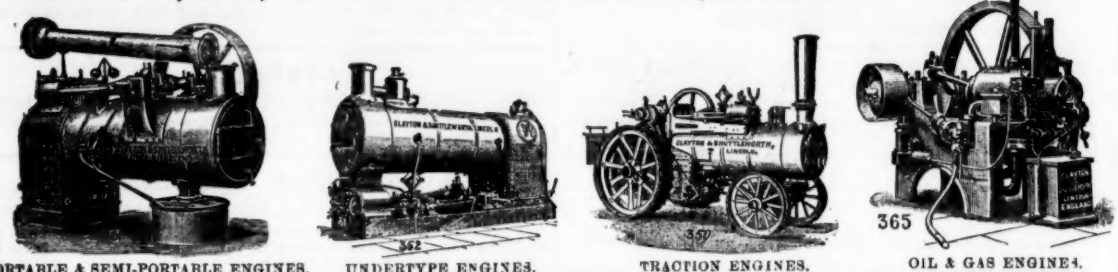

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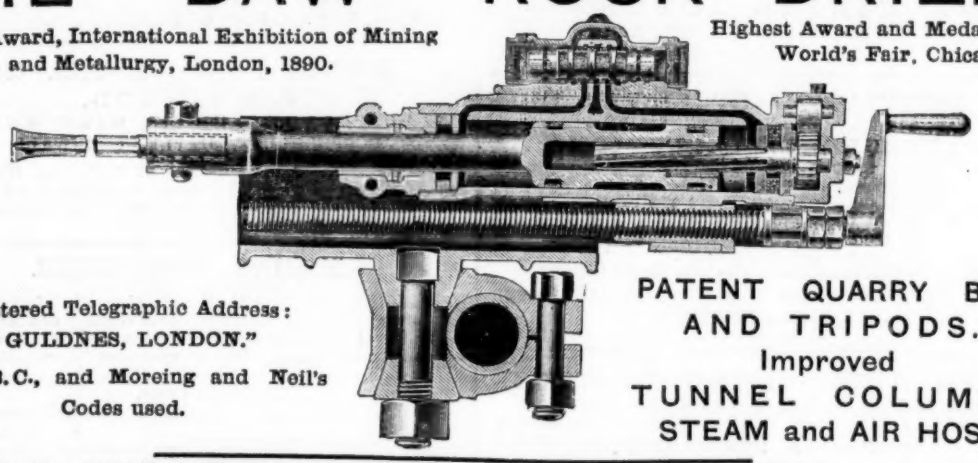

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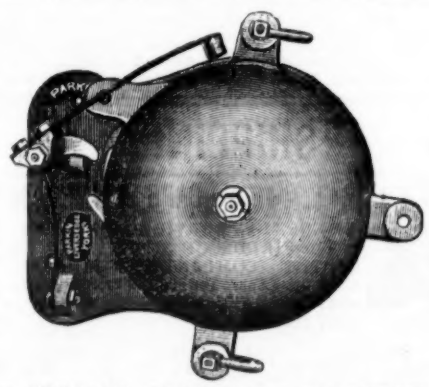

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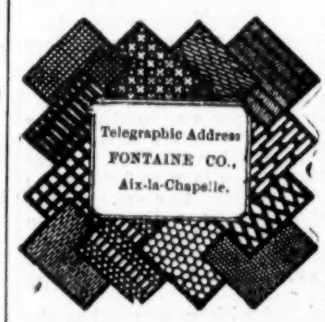

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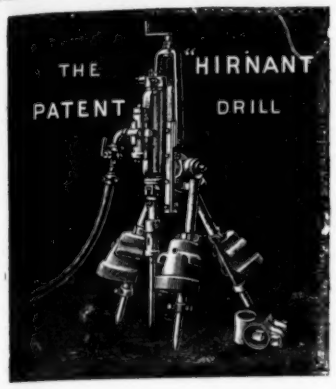

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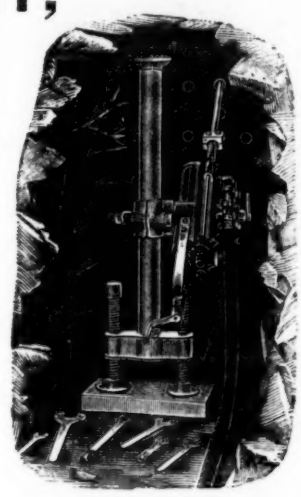

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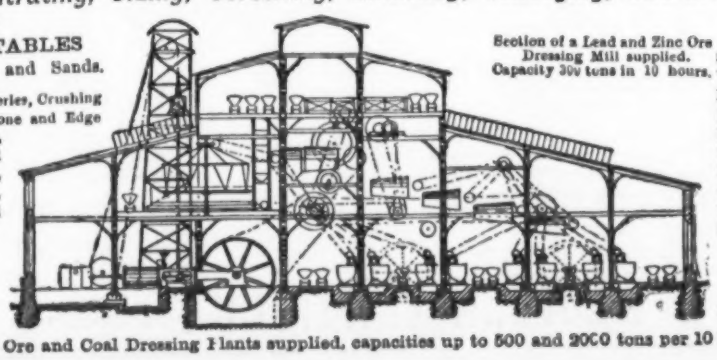

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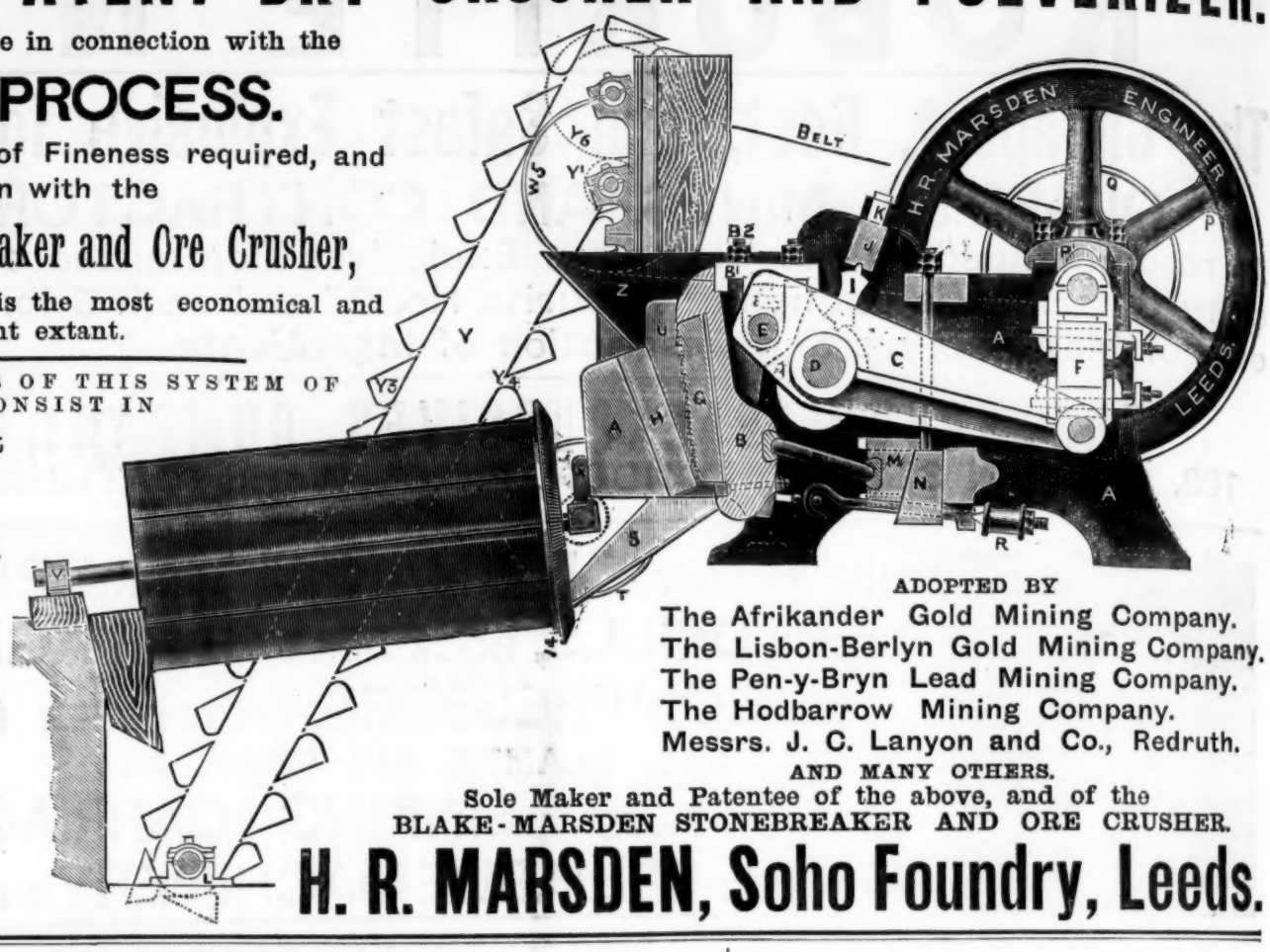

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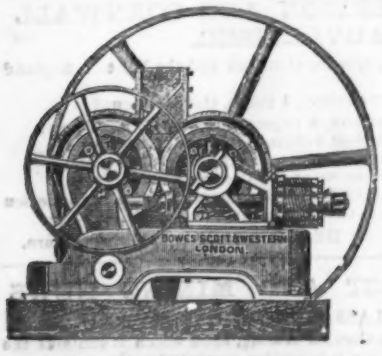

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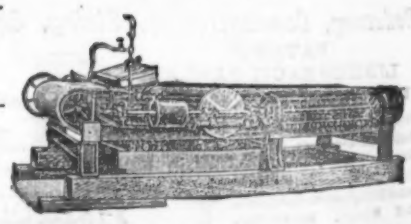

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